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Prices Weaken With Output High

Various Mills, Needing Tonnage, Quote Lower, Further Unsettling Market—Competition Grows Keener—Steel Ingot Production in March Highest in History—Now Subsiding—Iron Ore Cut of 80 Cents Surprises Industry

ANNOUNCEMENT of a new high record of steel production for this country in March has been accompanied by evidence of keener need of tonnage on the part of various mills, bringing with it a pronounced instability of prices that in spots, has become acute. Buyers, already cautious, have been rendered more unwilling to place tonnage other than in a hand-to-mouth way and are pressing upon sellers their advantage under present conditions. This makes it difficult to judge how far the immediate weakness represents a major fundamental change in consumption or a passing recession of demand, influenced mainly by sentimental causes.

More aggressiveness is being shown by a number of the independent mills in bidding for new business with price concessions. Even in the Chicago district which has been one of the firmest spots, competition from outside producers is beginning to unsettle the market. In this respect these producers reflect a less favorable position on bookings than the Steel corporation plants which are disposed to maintain prices. Shipments by the Steel corporation in March averaged 49,500 to 49,750 tons daily which compares with a high record of 51,000 tons established several years ago.

New Peak On Steel

Steel ingot production, as expected, reached in March a point never before equaled in this country when it attained the daily average of 159,455 tons, or at the annual rate of 49,590,000 tons. The previous best mark was April, 1923, with 157,776 tons daily average and an annual rate of 49,060,000 tons. Total ingot output in March is estimated at 4,145,829 tons against 3,780,663 tons in February.

Present indications point to an appreciably lower production in April as some further capacity is being taken off. The Steel corporation plants this week are back to 93 per cent which is 2 to 3 per cent less than their recent pace. The shrinkage among the independent companies is greater.

Recording the more abrupt drooping of the market, IRON TRADE REVIEW composite of 14 leading iron and steel products shows its largest decline in 24 weeks, to $42.55. Last week the composite was $42.91.

Ore Cut Large

The 80-cent per ton reduction in the season's price of Lake Superior iron ore to the lowest point since 1915 made the past week was greater than generally expected and is accepted as a manifestation of the sharper lines of competition that are forming in that industry. The lead in making this cut was taken by some of the larger producers. The 250,000-ton order of the Ford Motor Co. now closed, was vigorously competed for and served an important part in opening the market. Little other tonnage yet has been sold. On April 1, 23,880,000 tons of ore brought down in 1923 was awaiting consumption on dock and in furnace yards.

Mill and furnace shipments continue large and furnish a strong offset to the present market unsettlement. New business, while lighter, presents many encouraging signs. The Texas Oil Co. is figuring on a pipe line requiring 80,000 tons. The 60,000 tons for the McCorkle Pipe Line Co. is about to be closed. The Standard Oil Co. of New York has placed 300,000 boxes of export tin plate for last half. A 17,000-ton hotel at Chicago was awarded this week with another of 15,000 tons practically placed. Bridge work involving 25,000 tons is up on the Pacific coast, and a new project for a St. Lawrence river bridge involves 25,000 tons. Railroad car orders in March totaled 13,145.

Pig iron remains in the doldrums. Buyers are using the reduction in ore as the leverage for lower prices and further declines have resulted.

Prices Are Lower

Severity of the more vigorous competition in certain lines of steel is shown by some of the prices that have appeared this week. On the Chesapeake & Ohio inquiry for 40,000 tons of plates, shapes and bars, 2.10c, Pittsburgh, was named. A smaller order of railroad shop plates for the Big Four railroad brought out 2.25c, Youngstown. In the East 2.20c, Pittsburgh, is being done more freely and in the Pittsburgh-Cleveland district, 2.30c. Sheet bars show signs of weakening.

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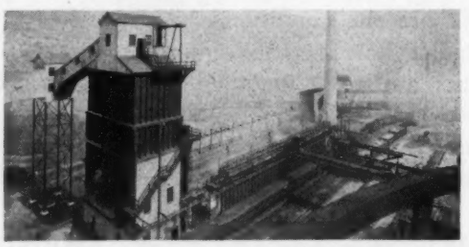
Keeping Step With Trade Progress

"IT may interest you to know that I think Iron Trade Review is one of the most quotable of the many papers that are sent to me weekly to look over for my department," writes the technical editor of an important national publication. Similar comments are made frequently to Iron Trade Review, and their sincerity is manifested by the way this paper is quoted. It is not only true



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with respect to technical features, but applies to market news and business and industrial information. The principal daily newspapers of the country lead their weekly reviews of iron and steel conditions by quoting Iron Trade Review or by giving this publication the preponderance of their space. Journals of trade associations dealing with iron and steel quote Iron Trade Review as the leading authority, and many times, exclusively. A sure test of the reputation of a business publication is how often it is quoted by those who themselves have reputations to maintain.

Do You Know That—

2223 subscribers to IRON TRADE REVIEW are identified with bessemer, open-hearth, electric and crucible steelworks. This certainly covers the field.

Pig Iron Trade Remains Dull and Prices Show More Weakness —Buying Everywhere Limited to Small Prompt Lots

PITTSBURGH, April 8.—Listlessness and indifference are typical of pig iron buyers' attitude. Deliveries on contracts are heavy. Two producers report shipments exceed production. Users are asking furnaces to expedite deliveries. Sales for several days have involved only single carload or 100-ton lots. No inquiries are pending. The reduction in ore prices is discounted, as ore at the new figures will not reach furnaces until summer or next fall. Figuring $3.75 coke and $4.75 for Mesabi nonbessemer ore the assembled materials for valley merchant stacks will cost about $18.80 allowing nothing for overhead. The latter is figured at $3.50 or $4. This brings the pig iron cost above $22. Two tons of ore at lower lake port are $9.50; freight to the valley is $1.82; Connellsville coke delivered to the valley is $6.60, and limestone is 90 cents. Coke makers state that $3.75 coke already discounts any contemplated wage reductions toward the 1917 wage basis.

One buyer of basic iron offering to pay $21.75 has been refused tonnage by a local seller. Several producers are quoting $22, valley, minimum, for single carloads. Bessemer is bringing $23. Foundry iron in middle hands is available at $22, valley. Merchant producers are selling at $22.50, valley. No. 2X iron has been sold at $23, and $23.50 in single carloads.

Prices Soften Further

Boston, April 8.—Further softness in pig iron has developed the past week in New England. A sale of 200 tons of No. 2X (2.25 to 2.75 silicon) to a Massachusetts consumer is reported at $21.50 eastern Pennsylvania furnace or $25.15 delivered. This is the same level as obtained some weeks ago against a 6000 or 7000-ton purchase and at that time was thought to be fully $1 under the market. Buffalo furnaces continue to report sales at $22, base and while nothing below this figure has come to light, it is known that differentials are being shaded freely and in some cases ignored. A 100-ton lot of No. 1X (2.75 to 3.25 silicon) placed in Connecticut was taken at $22.50 Buffalo or $27.41 delivered. Some attempt at holding the slipping Pennsylvania market has recently been made and one important producer has announced his intention of blowing out rather than dropping below $23, base. Sales in New England during the past week have been only a few thousand tons. Inquiry is scant and does not confirm the opinion of several observers that considerable buying is imminent. A New Hampshire manufacturer is asking for 3000 tons and several Massachusettes foundries are informally in the market for from 100 to 200 tons.

Eastern Market Dull

New York, April 8.—The pig iron market continues dull not more than 1000 tons having been sold in this territory during the past week. The New York Air Brake Co. is understood to have closed for 2000 tons of silicon iron for its plant at Watertown, N. Y. The New York Central railroad has not taken action on its inquiry for 500 tons of foundry iron. A pump company is negotiating for about 1200 tons of foundry iron for its New Jersey plant. A few smaller inquiries also are out. The market on eastern foundry iron may be regarded as $22 to $22.50, furnace. On Buffalo foundry iron the market continues $21 to $21.50, furnace.

Inquiries Total 6000 Tons

Buffalo, April 8.—Inquiries for pig iron call for about 6000 tons principally foundry and malleable. The Worthington Pump Corp., is inquiring for 1750 tons. The New York Air Brake Co. has reissued its inquiry for 1500 tons. Sales have been comparatively light. The going price is $22 base, on most small lots, with lower prices available on larger tonnages. Fifty cent differentials have been paid on the two higher grades of silicon. Resale iron and iron in stock will continue for some time to be a factor in the market here.

Market Is Weak

Cleveland, April 8.—Pig iron producers are holding to a price of $24, furnace, for delivery in the 50-cent switching area. This price appears out of line with Buffalo and valley prices and the reason for their maintaining $24 is the fact that they are well provided with orders for the second quarter and that the tonnage now being offered is very small. Pig iron is available at $21, Buffalo, which with a freight rate of $2.65 would bring the price 85 cents below the delivered price of Cleveland iron. Iron is offered by valley furnaces at $22, and a freight rate of $1.76, would leave a margin of 74 cents in favor of the valley iron. It has been rumored in the local market that less than $24, furnace, would be considered on tonnage, but two makers this week refused one lot of 300 to 400 tons on which the buyer wanter to do less than $24. Carload lots have been placed in the last few days with local makers at $24, furnace. The market generally is extremely dull, and this is reflected in further modification of prices quoted by some furnace companies with headquarters here, for delivery from stacks in surrounding territory. One operator has reduced its price $23, although booked to around 80 per cent of its present rate of output for the second quarter. This also applies to deliveries in Detroit territory. One 1000-ton lot and two 500-ton lots were booked this week. Another merchant interest sold 5000 tons of iron in the week, in smaller lots. Some consumers claim that they have been offered prices as low as $21, valley, while a maker competing in that territory believes $21.50 represents the minimum. More inquiries are developing for small spot tonnages. One large producer in March shipped 88,000 tons of iron, within 2000 tons of its total make. Deliveries are going forward in good volume, and the only recession noted has been in automobile castings. No inquiries or sales of basic iron figure in the week's transactions.

Quiet Buying Continues

Cincinnati, April 8.—The pig iron market is quiet with a regular succession of small orders. Inquiries aggregate 2500 tons. The Ohio Steel Foundry Co., Lima, O. is inquiring for 500 tons of basic while the Webster Mfg. Co., Lima, is negotiating for 300 tons of northern foundry iron and a like tonnage of malleable. The Worthington Pump & Machinery Corp. wants 200 tons of foundry and charcoal iron for its Elmwood, O., plant, while a melter at Hamilton, O., is in the market for 500 tons of No. 2 foundry. The American Elevator & Machine Co., Louis-

ville, and the Henry Vogt Machine Co., also of that city are inquiring for several cars each of southern iron. Prices are unchanged. Northern iron is quoted at $23 to $24, Ironton base, while southern iron ranges from $22 to $23, Birmingham base. Sellers say that $22 base can be done with at least one furnace interest in the Tennessee district. Sales of silvery iron are of small consequence and the same is true of charcoal and bessemer irons. Prices, however, remain unchanged.

Quiet in the South

Birmingham, April 7.—Pig iron shows no improvement, sales are few and small and in many instances for spot shipment. Quotations are weak and $22.50 for No. 2 foundry is reported with $23 and $23.50 as the common price. The Woodward Iron Co. has been shipping its output and the Sloss-Sheffield Steel & Iron Co. continues loading iron from stock, so that there is a general reduction of accumulated iron. The local melt of pig iron shows no decline.

Furnace Stacks Reduced

Philadelphia, April 8.—While the order books of eastern furnaces were considerably reduced by the heavy March shipments and the slow rate of buying, the end of the month saw a substantial reduction of the tonnage of iron in producers' hands. If it were not for the continuing lack of market demand, eastern merchant pig iron business would be considered in fair condition. However, the market continues in the third week of one of the quietest buying periods in its history. Sales made by producers in this district in the week probably did not exceed 2000 tons. Only a few small inquiries now are current. Eastern foundry iron is held at from $22 to $22.50, base furnace.

Chicago Market Dull

Chicago, April 8.—Activity in the pig iron market has dropped to a low ebb and sales of 100-ton lots now are scarce. Shipments on contracts are heavy, and in this respect April is starting out on the same level with March, which was better than February. Car wheel, automobile and implement foundries are melting less iron, but the general jobbing foundries are holding their own. Hope is entertained that the automobile business will revive with several weeks of good weather. Furnaces are getting $24.50 furnace for the small northern foundry and malleable business that is being done. One broker is selling small lots of malleable at $24. The general opinion is a good tonnage would develop a furnace price under $24.50, but no such test of the market is in sight. Most melters are buying as little as possible, believing an advance is improbable and a reduction is possible when they have to buy. There is no reflection of the reduced ore price as yet. Southern market weakness is more pronounced, and as low as $22, Birmingham, is possible. A Sheffield maker still is willing to meet northern competition with barge iron, but sales are light. The only outstanding inquiries for northern iron are from a Wisconsin melter who wants 400 tons of foundry iron, and from western Indiana for 250 tons of foundry iron.

Quiet at St. Louis

St. Louis, April 7.—Quiet prevails in the pig iron market. Sales are in small lots, the largest being 250 tons to a local specialty manufacturer. Several stove plants purchased for quick shipment ranging from carloads up to 150 tons, and an Illinois user took 100 tons of high silicon. The leading local producer reports sales of about 1200 tons, which brings total tonnage to about 2100 tons. Inquiries are light. A Cincinnati brokerage interest asked for prices on 600 tons, and an Iowa machinery maker inquired for 150 tons of foundry for April shipment. No change is shown in asking prices, but it is well understood that offers of business in volume would result in shading of the current market. No. 2 southern is freely offered at $23 Birmingham, and prices on some Tennessee iron will figure back lower than that price.

Production has been resumed at the plant of the Mississippi Valley Iron Co., recently leased by the St. Louis Coke & Iron Co. The Granite City operation of the latter company is still active, and combined daily output is approximately 900 tons.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Apr. 9, 1924	Mar., 1924	Jan., 1924	Apr., 1923
PIG IRON				
Bessemer, valley del., Pitts....	$24.76	24.86	24.66	32.77
Basic, valley	21.75	22.00	21.40	31.00
Basic, eastern del., eastern Pa....	21.50	22.00	22.50	30.75
*No. 2 foundry, del. Pitts.....	23.76	24.26	24.16	32.77
*No. 2 foundry, Chicago	24.50	24.50	23.70	32.50
*Southern No. 2, Birmingham..	22.50	23.00	21.60	27.00
*Southern Ohio, No. 2, Ironton.	23.00	23.50	22.90	31.00
**No. 2X, Virginia furnace	25.50	26.00	25.00	29.25
**No. 2X, eastern del., Phila..	24.13	24.13	24.26	32.00
Malleable, valley	22.25	22.50	22.00	31.00
Malleable, Chicago	24.50	24.50	23.70	32.50
Lake Superior charcoal, Chicago	29.04	29.04	29.04	36.55
Gray forge, val., del. Pittsburgh	23.26	24.26	23.56	31.77
Ferromanganese, del., Pitts.	112.29	112.29	113.79	124.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh.	42.50	42.50	42.50	45.85
Sheet bars, open-hearth, Pitts....	42.50	42.50	42.50	45.85
Billets, bessemer, Pittsburgh.....	40.00	40.00	40.00	46.00
Billets, open-hearth, Pittsburgh..	40.00	40.00	40.00	46.00
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.30	2.40	2.40	2.35
Steel bars, Chicago	2.50	2.50	2.50	2.43
Steel bars, Philadelphia.....	2.57	2.67	2.72	2.825

	Apr. 9, 1924	Mar., 1924	Jan., 1924	Apr., 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.57	2.57	2.57	2.845
Iron bars, Chicago mills	2.35	2.40	2.40	2.60
Beams, Pittsburgh	2.30	2.50	2.50	2.45
Beams, Philadelphia	2.57	2.62	2.72	2.845
Beams, Chicago	2.60	2.60	2.60	2.53
Tank plates, Pittsburgh.....	2.30	2.40	2.50	2.45
Tank plates, Philadelphia	2.52	2.57	2.72	2.945
Tank plates, Chicago	2.60	2.60	2.60	2.53
Sheets, blk., No. 28, Pittsburgh.	3.75	3.75	3.75	3.85
Sheets, blue anl., No. 10, Pitts.	2.85	2.95	2.95	3.15
Sheets, galv., No. 28, Pittsburgh	4.90	4.90	4.95	5.00
Wire nails, Pittsburgh	3.00	3.00	3.00	3.00
COKE				
Connellsville furnace.....	3.60	4.05	3.80	6.25
Connellsville foundry, ovens....	4.75	4.85	4.35	7.80
OLD MATERIAL				
Heavy melting steel, Pittsburgh	17.00	19.75	21.10	25.85
Heavy melting steel, eastern Pa.	15.50	17.00	18.15	23.50
Heavy melting steel, Chicago...	15.00	16.70	17.40	22.40
No. 1 wrought, eastern Pa.....	18.50	19.00	20.10	27.00
No. 1 wrought, Chicago	15.50	16.05	17.50	22.75
Rails for rolling, Chicago.....	17.25	19.30	18.90	23.65

*1.75 to 2.25 silicon **2.25 to 2.75 silicon.

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Apr. 9, 1924	Apr. 2, 1924	Mar., 1924	Jan,, 1924	Apr., 1923	Apr., 1914
$42.55	$42.91	$43.24	$43.26	$47.01	$23.39

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, 1012; WAREHOUSE, PAGE 1008; ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1014

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00
Bessemer, Pittsburgh	24.76
Basic, valley	21.75 to 22.00
Basic, Pittsburgh	23.51 to 23.76
Basic, Buffalo	21.00 to 22.00
Basic, del., eastern Pa.	21.50 to 22.00
Malleable, valley	22.25 to 22.50
Malleable, Pittsburgh	24.01 to 24.26
Malleable, Chicago	24.50
Malleable, Buffalo	21.50 to 22.00
Malleable, del., eastern Pa.	24.00 to 24.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.13 to 24.76
No. 1X, Buffalo	22.00 to 22.50
No. 2 foundry, valley	22.00 to 22.50
No. 2 foundry, Pittsburgh	23.76 to 24.26
No. 2 foundry, Buffalo	21.00 to 22.00
No. 2 foundry, Chicago	24.50
No. 2 foundry, Granite City	24.50 to 25.00
No. 2 foundry, Ironton fur.	23.00 to 24.00
No. 2 foundry, Cleveland, del.	24.00 to 24.50
No. 2 foundry, del., Phila.	23.13 to 23.76
No. 2 foundry, N. J. tidewater	23.63
No. 2X, eastern del., Phila.	23.63 to 24.26
No. 2X, east, N. J. tidewater	24.13
No. 2X, eastern del., Boston	25.65 to 26.65
No. 2X foundry, Buffalo fur.	21.50 to 22.00
No. 2X, Buffalo, del. Boston	26.91 to 27.91
No. 2 southern, Birmingham	22.00 to 23.00
No. 2 southern, Cincinnati	26.05 to 27.05
No. 2 southern, Philadelphia	30.30 to 31.30
No. 2 southern, Chicago	28.01 to 29.01
No. 2 southern, Cleveland	28.01 to 29.01
No. 2 southern, Boston (rail and water)	28.91 to 29.91
No. 2 southern, St. Louis	27.17 to 28.17
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia, Phila.	30.17 to 31.17
No. 2X, Virginia, Jersey City	31.04 to 32.04
No. 2X, Virginia, Boston	31.41 to 32.41
Gray forge, eastern Pa.	22.00 to 22.50
Gray forge, val. del., Pitts.	23.26 to 23.76
Low phos., standard, valley	29.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	27.00
†Low phos., English, Phila.	26.76 to 27.26
Charcoal, Birmingham	33.00 to 33.50
Charcoal, Superior, Chicago	29.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	31.00
8 to 9 per cent	32.50
9 to 10 per cent	34.50
10 to 11 per cent	36.50
11 to 12 per cent	39.00
12 per cent	41.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	41.50
11 to 12 per cent	44.00
12 to 13 per cent	46.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	107.50
Ferromanganese, delivered, Pittsburgh	112.29
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	35.00 to 38.00
†Spiegeleisen, English, delivered tidewater	35.00 to 38.00
Ferrosilicon, 50 per cent contract freight allowed	75.00
Ferrotungsten standard, cents per pound contained	88.00 to 93.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.60 to 4.00
Connellsville foundry	4.75 to 5.50
New River foundry	10.00 to 11.00
Wise county furnace	4.25 to 5.50
Wise county foundry	5.00 to 6.00
Alabama furnace	5.00 to 6.00
Alabama foundry	5.50 to 6.50

By-Product

Foundry, Newark, N. J., del	$10.41
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.00
Foundry, Granite City, Ill.	12.00
Foundry, Alabama	5.50 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00
Open-hearth, Youngstown	40.00
Open-hearth, Philadelphia	43.17 to 45.17
Bessemer, Pittsburgh	40.00
Bessemer, Youngstown	40.00
Forging, Pittsburgh	45.00
Forging, Philadelphia	48.17 to 50.17

SHEET BARS

Open-hearth, Pittsburgh	$41.00 to 42.50
Open-hearth, Youngstown	41.00 to 42.50
Bessemer, Pittsburgh	41.00 to 42.50
Bessemer, Youngstown	41.00 to 42.50

SLABS

Pittsburgh	40.00
Youngstown	40.00

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.30c to 2.50c
Universal skelp, Pittsburgh	2.30c to 2.50c
Sheared skelp, Pittsburgh	2.30c to 2.50c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.30c to 2.40c
Structural shapes, Phila.	2.52c to 2.62c
Structural shapes, New York	2.54c to 2.64c
Structural shapes, Chicago	2.50c to 2.60c
Tank plates, Pittsburgh	2.25c to 2.40c
Tank plates, Philadelphia	2.47c to 2.62c
Tank plates, New York	2.49c to 2.64c
Tank plates, Chicago	2.50c to 2.60c
Bars, soft steel, Pittsburgh	2.30c to 2.40c
Bars for cold finishing, Pitts.	2.55c
Bars, soft steel, Philadelphia	2.52c to 2.62c
Bars, soft steel, New York	2.54c to 2.64c
Bars, soft steel, Chicago	2.40c to 2.50c
Bars, refined iron, Pittsburgh	3.15c to 5.00c
Bars, rail steel, Chicago	2.30c to 2.33c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.30c to 2.40c
Bar iron, common, Phila.	2.57c
Bar iron, common, New York	2.59c
Bar iron, common, Chicago	2.35c to 2.40c
Bars, forging quality, Pitts	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	2.75c to 2.90c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.35c to 3.50c
Bands, Pittsburgh	2.75c to 2.90c
Cold finished steel bars, Pittsburgh base, carloads	3.00c
Cold-finished steel bars, base Pittsburgh, less carloads	3.25c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.70
Cut nails, Pittsburgh	3.00c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.00c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.00c to 3.15c
Spikes, small railroad, Pitts.	3.25c to 3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.10c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.10c
Tie plates, Pittsburgh	2.55c to 2.60c
Ties plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.50c to 2.60c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts	6.00c to 6.25c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	2.75c to 3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh	4.75c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	3.97c to 4.17c
No. 28, open-hearth, Chicago	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	4.90c to 5.00c
No. 28 bessemer, Pittsburgh	4.90c to 5.00c
No. 28, open-hearth, Phila.	5.17c to 5.32c
No. 28, open-hearth, Chicago	5.19c to 5.34c

BLUE ANNEALED

No. 10, open hearth, Pitts.	2.85c to 3.00c
No. 10 bessemer, Pittsburgh	2.85c to 3.00c
No. 10, open-hearth, Phila.	3.22c to 3.32c
No. 10, open-hearth, Chicago	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$61.20 to 62.20
Six-inch and over, Chicago	57.20 to 58.20
Four-inch, Birmingham	52.00 to 53.00
Six-inch and over, Birmingham	48.00 to 49.00
Four-inch, New York	65.60 to 66.60
Six-inch and over, New York	60.60 to 61.60
Standard fittings, Birmingham, base	$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

All Scrap Markets Lower

General Decline Follows Refusal of Consumers To Buy Further—No Check to Downward Movement—Dealers Not Ready To Stock

SCRAP PRICES, PAGE 1012

Chicago, April 8.—Although some grades of iron and steel scrap have declined another 50 cents, heavy melting steel continues at $15 to $15.50. The market still is weak but bearishness is not so pronounced. After weeks of decided declines the market has now reached a state of uncertainty and most dealers are cautious about commitments. Dealers seem anxious to sell melting steel at $15 delivered. Turnings are weak and with practically no consumer buying. In fact, 90 per cent of all market activity is between brokers. Railroad offerings include 5700 tons by the Wabash, 2900 by the Santa Fe, 1000 by the Chicago & Eastern Illinois and 800 by the Geo. W. Jenings Co.

No Demand at Buffalo

Buffalo, April 8.—Demand for iron and steel scrap has practically ceased and dealers are not active. Nothing has developed to indicate buying in the immediate future. Canadian dealers are offering $18.50 to $19 Buffalo for No. 1 machinery cast scrap but local dealers are not anxious to close at this price. Railroad lists closing during the week are thought to have brought $17 for heavy melting steel, a price higher than the mills are offering. A local consumer continues to embargo shipments on heavy melting steel orders and prospects for immediate improvement in open-hearth operation are not good.

Detroit Market Weak

Detroit, April 8.—Weakness in the iron and steel scrap market continues. Prices are averaging 75 cents lower than last week and about $6 a ton lower than when the break began six weeks ago.

Consumers have large supplies to meet present needs. Producers are increasing their output and this causes much concern among dealers.

Prices Again Revised Downward

Philadelphia, April 8.—Scrap prices generally are lower again with heavy melting steel now $15 to $16, delivered. The tone of the market is somewhat better. There is more demand and much larger buying during the last couple weeks than was apparent evidently was transacted. Several large transactions were put through quietly. Fully 15,000 tons of material has been sold for steel plants.

Prices Again Go Down

Cleveland, April 8.—Iron and steel scrap has dropped to new low levels on the present downward movement. Demand from consumers has disappeared, sales being limited to dealer transactions, many dealers believing this a good time to lay down tonnage on yards. Prices have reached a point where dealers see no likelihood of their going much if any lower. The markdown runs from 50 cents to $1.50 a ton on prices of a week ago, practically every item on the list being affected. Heavy melting steel now is $14.50 to $15; machine shop turnings, $10.75 to $11; cast borings, $11.75 to $12; mixed borings and turnings for blast furnace use, $11.50 to $11.75; No. 1 cast, $20 to $20.50; heavy cast, $12 to $12.50. Valley prices are down similarly, heavy melting steel being quoted $17 to $17.25; hydraulic compressed sheets, $15 to $15.50; machine shop turnings, $11 to $11.25.

Cincinnati Market Reduced

Cincinnati, April 8.—Another reduction approximating 50 cents a ton has been made on most grades of scrap by dealers in this district. Busheling and heavy cast are unchanged. Malleable is down $1 a ton, with a similar reduction in car wheels. Consumers still are out of the market and survey of their needs by dealers, reveals liberal supplies on hand or ready for movement. Producers are less disinclined to dispose of their tonnage at current prices and as a result few important lists are out. Yard dealers report some tonnage taken in at prices slightly under the present quotations. They are unable to move material they report. The policy of all users is to put off quantity buying as long as possible.

Scrap Almost Lifeless

Boston, April 8.—Heavy melting steel scrap is reported by some dealers as a drug on the market. Dealers are holding prices too high to permit shipment against the meager Pennsylvania demand. A little activity resulted from an order for blast furnace borings and turnings by a Pennsylvania interest. Against this order offers of $9.50 shipping point for borings and turnings were made earlier in the week but the ready supply at this figure caused a decline to $9 within a few days. A Portland, Me., consumer bought shafting at $18.50 shipping point. A scant tonnage of car wheels changed hands for speculation and some stove plate was sold to a New England consumer at $16 deliv-

(*Concluded on Page* 965)

Semifinished Trade Quiet

Some Contracts Closed at Current Schedules, but Softness Is Developing in Sheet Bars—Sheet Mills Taking Less Tonnage

SEMIFINISHED STEEL PRICES, PAGE 955

Pittsburgh, April 8.—Second quarter contracts for semifinished material have been sent out for signatures of buyers, carrying the same figures as applied in the first quarter, and these have come back signed without question or complaint. A number of April specifications on second quarter contracts have been received and they compare favorably with those received last month. Little activity is noted in the market for 4 x 4-inch rerolling billets. A few contracts have been placed for small billets and some have been at the $40 base price, the $2.50 differential having been waived. Several forging billet contracts have been renewed on the basis of $45, Pittsburgh. The Oil Well Supply Co., Oil City, Pa., and the Heppenstall Forge & Knife Co., Pittsburgh, have made purchases recently.

Sheet bars are firm at $42.50, Pittsburgh or Youngstown. A few lots of slabs have been ordered, involving 1000 to 5000 tons at $40, Pittsburgh. Wire rod business is slightly larger, the basis remaining unchanged at $51, Pittsburgh. Skelp is quoted at 2.30c to 2.50c, some wheel skelp being taken at the maximum.

Buying Is Restrained

Youngstown, O., April 8.—Quietness in the sheet market has exerted a restraining influence on demand for semifinished material. Producers lack inquiries and attention is centered on specifications against contract tonnages. Toward the close of last quarter sheet bars, billets and slabs were obtainable from only one source in this district, but no difficulty is encountered now in obtaining tonnage. Makers continue to quote sheet bars at $42.50, and slabs and standard billets at $40, Youngstown or Pittsburgh.

Sheet Bars Softer

Cleveland, April 8.—Although sheet bars and small billets have been taken for immediate rolling in the last few days at $42.50, Youngstown, the price of sheet bars is not as strong as recently indicated. Reports are heard that less can be done on tonnage with certain producers, and more developments in this direction are expected. Specifications are being received in good volume, but inquiries are limited to small lots for prompt shipment. The leading producer in this district shipped more semifinished material in March than in any prior month in its history.

Market Is Untested

Philadelphia, April 8.—Billet sales are small and scattered, and not sufficient to test the market. Rerollers are $38 to $40, Pittsburgh, and forging quality $43 to $45.

Quiet Market

Rules in All Ferroalloys—Some Spiegeleisen Tonnage Is Closed

FERROALLOY PRICES, PAGE 955

New York, April 8.—Business in spiegeleisen has improved, and fully 500 tons have been sold during the past week for early shipment. The market on 20 per cent metal now is $35 to $38, furnace. Sales of moderate tonnages of English spiegeleisen recently have brought all the way from $33 to $38 tidewater. Demand for ferromanganese is very light and only carload sales are reported. The

price continues firm at $107.50 duty paid tidewater.

Consumers Are Well Covered

Pittsburgh, April 8.—Ferromanganese and other ferroalloy consumers covered earlier in the year for most of their first half wants; consequently the market now is quiet. Users not yet protected for third quarter requirements are not quite ready to consider that period. In the meantime deliveries are heavy, shipments by domestic producers approximating production. Sales and inquiries both are dull, being confined to single carloads for the most part. The price is unchanged at $107.50 c.i.f. Atlantic ports duty paid on the English, or $107.50 seaboard base for the domestic. Two or three inquiries are out for ferrotungsten involving 10,000 or 20,000 pounds from tool steel manufacturers. Prime material is quoted at around 95 cents. Ferrovanadium is showing some life, a few users asking for prices. The open-hearth grade is quoted at $3.50 and the tool steel grade at $3.75 to $4. Spiegeleisen is quiet, most users in this and nearby districts being covered. Prices are unchanged.

New business in the ferroalloy specialties has been almost at a standstill. Shipments on contract have continued at a good rate, though releases for April do not look quite as heavy as those for March. Prices are unchanged throughout the list.

Tin Plate Active

Canmakers Demand Heavy Shipments —Orders for 300,000 Boxes Placed

TIN PLATE PRICES, PAGE 955

Pittsburgh, April 8.—Production and shipments of tin plate good for several weeks, will probably show increase during April and May as most material wanted by canmakers will reach their hands in those two months. The Standard Oil Co. of New York was able to place its order to be rolled in April, May and June for approximately 300,000 base boxes for export requirements in last half. Since no price has been announced for last half, it is understood it went on the basis of the present price. When selling at $5.50 per base box of 100 pounds, Pittsburgh, some independent tin plate producers find it impossible to break even with pig tin at the prevailing market and this group is anxious for an advance. The American Sheet & Tin Plate Co. lost the production the greater part of last week of both its La Belle works, Wheeling, Va., and its Laughlin works, Martins Ferry, O., due to flood waters on the Ohio river but is back to 95 per cent of tin mill capacity this week. The general average is between 90 and 95 per cent.

Booked For First Half

Youngstown, O., April 8.—District makers of tin plate have sufficient orders to finish out the first half at the present operating rate of 90 per cent. In view of the close margin of profit one maker is confining its output solely to black plate and reports a fairly good buying demand. Black plate in tin mill sizes is quotable at 3.75c to 3.85c, Pittsburgh, and tin plate at $5.50 per base box, Pittsburgh.

Coke Sales Are Restricted

Activity in Beehive Market Limited to Distress Lots at $3.60 for Furnace Grade—Ovens Going Out—Light Foundry Demand

COKE PRICES, PAGE 955

Pittsburgh, April 8.—Activity in the beehive coke market is limited to distress lots of the furnace grade, selling for spot delivery at $3.60. Other spot prices are $3.75. Some producers are offering delivery over the month or more at the latter price. Others maintain $4 at their minimum for monthly or quarterly contracts. One sale of 2000 tons is noted at $4. This was low-sulphur standard furnace coke. One or two coke producers having affiliated blast furnace interests may purchase coke in the open market for a month or more, shutting down their ovens, since $3.75 is below their cost. Blast furnace inquiries are few and far between, only one or two now being negotiated. Inquiry is active for foundry coke, cullings for salamander or coke oven use. These are for carloads, some buyers wanting a carload weekly until July. This material is scarce and is bringing $3.75. An improvement in foundry coke demand still awaits the consumption of stocks in foundry yards. Spot sales are small and no contracts are being written. Standard selected 72-hour fuel is quoted $4.75 to $5.50. Premium brands still are selling at $6.75, maximum. Production has been further curtailed and ovens are going out. A reduction in wages in the non-union fields is said to be necessary unless the pig iron market revives. Production of coke for the week ended March 29 was 217,900 tons, as compared with 238,840 tons the preceding week, according to the *Connellsville Courier*.

Demand Light; Prices Weak

New York, April 8.—Demand for coke here continues of small proportions and prices show a weak undertone. The market on spot standard foundry coke is $4.75 to $5.50, Connellsville, although special brands continue to bring a higher figure. Spot standard furnace coke is quoted at $3.75, Connellsville, and can be had at considerably less. On medium sulphur coke the prices range from $3.35 to $3.50. The price on standard by-product foundry coke is $10.41 delivered at Newark and other northern New Jersey consuming points.

Sales Still Restricted

Cincinnati, April 8.—Coke buying is confined to few small lots. The recent decline of $1.50 on domestic sizes has started some buying. The foundry coke market is easier. The minimum on the Wise county foundry grade is $5, ovens, while some of the special brands are bringing $6, ovens. New River foundry fuel is quoted at $10 to $11, ovens. Connellsville offerings are plentiful. Producers of by-product foundry coke report production in excess of shipments. Furnace demand still is lacking.

St Louis Market More Active

St. Louis, April 8.—With more stability in the coal situation, consumers of coke are disposed to make purchases, and in the past 10 days there has been a fair volume of contracting, particularly by domestic users. Lower prices have served to stimulate buying. Industrial users have appeared in the market, and generally the situation looks more encouraging. Foundry coke is fairly active, with virtually all the current business going to the by-product makers. The largest coke inquiry reported is for 9000 tons of the furnace grade for delivery in the next three months. A local foundry has asked prices on 6000 tons for delivery in the first half.

Southern Output Steady

Birmingham, Ala., April 7.—Coke production is steady but there is no appreciable improvement in the southern market. Prices still are weak. The iron companies are keeping their coke output a little ahead of their needs and two or more are offering tonnage in the open market. Quotations range between $5.50 and $6.50 for the foundry grade. The Woodward Iron Co. announced its coke record in March as 71,432 tons, manufactured in the by-product plant at Woodward. The previous record was 71,139 tons. Local consumption of coke is good.

Strips Hold Fairly Well

STRIP PRICES, PAGE 955

Pittsburgh, April 8.—Demand for strip steel, both hot and cold-rolled, is holding well and in a few cases March bookings exceeded shipments. Some slackening in new buying has been apparent in automotive lines but other consumers have continued to take their full quotas. Since buying for second quarter in many cases stopped when April needs were covered, additional purchases will be made this week for May and possibly for June. Especially attractive lots of hot strips were taken at 2.75c but because most orders were for smaller tonnages most bookings carried 2.90c base Pittsburgh, with some at 3.00c. Deliveries on most sizes of hot strips are three weeks deferred and on the narrower sizes six weeks. Cold strips are quoted at 4.75c base Pittsburgh and most sizes can be delivered in four weeks. Strip mills here are being operated at 60 to 70 per cent of capacity.

Leaves Workers Income

Birmingham, Ala., April 8.—John J. Eagan, former president of the American Cast Iron Pipe Co., Birmingham, Ala., who died recently, left a will in which he seeks to perpetuate the spirit of the golden rule, which in life he endeavored to develop among the employes of his pipe plant. The will filed for probate Monday stipulates that the 1085 common shares of the company be placed in a trust fund for the benefit of the employes of the company, all dividends and earnings thereon to be used in supplementing wages and assisting workmen incapacitated by illness or accident.

Bar Price Is Slipping

Preferential Buyers of Large Tonnages Given Advantage—Some Suspensions but New Business Balances Such Losses

BAR PRICES, PAGE 955

Chicago, April 8.—A slight but steady decline in demand for soft steel bars in the Chicago district and weakness in the Pittsburgh district are causing keen competition in outlying territory like the Twin Cities and St. Louis and having a depressing effect on bar prices. Many consumers, heartened by the weakness in eastern markets are pressing for revision of prcies by local mills. Consumption in the West is fairly strong and while users are buying for urgent needs only these are sufficient to account for a fair tonnage. The range on soft steel bars in the Chicago district now is 2.40c to 2.50c, Chicago mill.

Bar iron can now be had at 2.35c, Chicago, compared with 2.40c that has held for many months. Although demand for some time has barely justified single-turn operations, the reduction is credited to the drop in scrap.

One rail steel bar mill that has been on double-turn has dropped back to single turn. Backlogs are gradually being eaten away. The price remains 2.30c to 2.33c, Chicago.

New England Tonnage Drops

Boston, April 8.—Demand for steel bars subsided noticeably during the past week. The leading producers hold firm in the New England district to 2.40c, Pittsburgh. One independent is understood to have closed on about 100 tons at 2.30c and a few consumers report quotations at 2.35c. Apparently the New England bar market is stronger than in other districts as the bulk of the tonnage is being placed at the full 2.40c.

Lower Prices Come Out

Pittsburgh, April 8.—Lower prices on merchant steel bars are appearing, although so far they have been quoted only to preferential customers taking large quantities. Some few are quoted 2.25c, base Pittsburgh, others 2.30c while small buyers are quoted the full market figure of 2.40c, base Pittsburgh which is the basis of many contracts now being specified against. One independent maker able to furnish only open-hearth steel in a limited range is seeking orders for carbon steel bars since its alloy steel bar business has fallen off considerably. Just what prices are being made is not announced but it is laying itself open to firm offers at below 2.40c. A representative range in market quotations would be 2.30c to 2.40c, base Pittsburgh. Buying is limited. Some suspensions are being made by cold-finished bar producers who have received holdups from automotive customers. Others are furnishing specifications regularly on contracts carrying 2.40c at a rate comparable with their March takings. Spring manufacturers also are buying bars at 2.40c. The market is dragging, although a strong effort is being made to avoid lower levels in the belief that a formal decline at this time will only serve further to unsettle the situation.

Refined iron bars are offered at as low as 3.15c, base Pittsburgh. Not much life is apparent in that market.

Valley Price Is Weaker

Youngstown, O., April 8.—Quotations on soft steel bars are beginning to show some signs of weakness with business closed recently at 2.30c, Pittsburgh, by one or two mills in nearby districts. Most producers have not been obliged to meet this price yet. While the volume of business being entered by producers here is small, 2.40c Pittsburgh is the prevailing price.

More Weakness Is Shown

Cleveland, April 8.—Some buyers have reported this week that they have been quoted 2.30c, Pittsburgh or 2.515c, Cleveland. In another instance a lot of small angles is said to have gone at 2.40c, Cleveland. While the market is weaker, such instances represent the extreme rather than the ordinary run of business. The 2.30c price, while it is present in the market today, is by no means general and apparently applies to very attractive tonnages or where competition is exceedingly keen. The leading producer continues to maintain the price of 2.40c, Pittsburgh. A leading Pittsburgh independent quoted 2.35c, Pittsburgh, on a small tonnage of bars to the Big Four railroad. Under present unsettled price conditions, buyers are more cautious than ever in placing tonnage but the market still shows a good flow of tonnage by specifications. Some slowing down of demands from automotive parts manufacturers is apparent but no suspensions are noted. Wide bands are easy with 2.75c, Pittsburgh, being done. Narrow bands are firmer around 2.90c, as are hoops at 2.90c to 3.00c, Pittsburgh.

Placing Actual Requirements

Pittsburgh, April 8.—Cold-finished bar makers find buyers are not placing anything but actual requirements. While some suspensions have been received and have been passed on to merchant steel bar mills, other new orders have been substituted. One suspension to a merchant steel bar maker involved 1000 tons and within two days after the cold finisher requested that shipments be held up, he sent in specifications aggregating in excess of 800 tons, largely automotive, which he had booked in the meantime. Suspensions accordingly are not alarming and in some cases are no more extensive than ordinarily received. The price is unchanged at 3.00c, base Pittsburgh, freights being equalized in territory reached by Chicago makers quoting 3.00c, base, Chicago.

Price Levels Demoralized

Philadelphia, April 8.—The steel bar market price is demoralized with carload sales last week going as low as 2.20c and 2.25c, Pittsburgh. In one case the consumer did 2.15c, Pittsburgh, but this price is not a market factor. The current market quotations are from 2.20c to 2.30c, Pittsburgh.

Narrow Hoop Sales Heavy

HOOP PRICES, PAGE 955

Pittsburgh, April 8.—Bookings of narrow hoop and band sizes of hot strips are heavy compared with the wider hot strips. One maker whose mill was idle for three weeks has built a considerable backlog and can run full for a month or more. The majority of producers are five to seven weeks behind on deliveries. New buying by automotive interests for second quarter is less free than for first quarter although further bookings probably will be made before the month is out. Regular hoops and bands are quoted at 2.75c to 2.90c base Pittsburgh, the minimum representing the price done on particularly attractive lots.

Bolt, Nut, Rivet Price Is Unsettled

NUT AND BOLT PRICES, PAGE 1014

Pittsburgh, April 8.—Business is not good in nuts, bolts and rivets, buying from day to day being insufficient to satisfy all producers. In this situation, the tendency is to seek by price cuts to gather a share of the going business and the price situation is generally unsettled. Where the open market quotation on large machine bolts is 60 and 5 off, some orders have been taken at 60 and 10 off, while particularly attractive orders developed a 60, 10 and 5 per cent discount. Shipments are well distributed, jobbers placing orders as material is needed. Some railroads are buying nuts and bolts as well as rivets. Some fair sized orders for rivets have been placed by car builders and equipment companies. Rivets in attractive lots have gone as low as 2.65c, Pittsburgh.

Quotations Are Shaded

Cleveland, April 8.—While shading of bolt and nut prices is being done on especially desirable business most orders are going at the 60 and 10 off price. Considerable contracting is being done but within the past few days there has been a noticeable letdown in spot business.

Rivets continue weak and prices are being shaded $1 to $2 a ton according to the size and desirability of the business. However practically all contract business is going at 2.75c base Pittsburgh. Spot demand is small.

Specifications Are Lighter

Chicago, April 8.—Makers of bolts and nuts are feeling the letup in automobile and allied industries and both new business and specification on contracts are not so heavy. Many implement makers also are taking less material. The base quotation continues 60 and 10 off for large machine bolts.

Market Reflects Price Cutting

Philadelphia, April 8.—The bolt, nut and rivet market reflects more general price cutting. The prevailing rivet market price now is 2.75c, Pittsburgh, with shading down to 2.60c. The current price on large bolts is quoted at 60 and 10 off. Considerable business is going at 60 and 5

off and 60 and 10 off. The Reading has issued a large new rivet inquiry.

Warehouse Prices Shaded Again in East

WAREHOUSE PRICES, PAGE 1008

New York, April 8.—Prices on shapes, plates and bars have been marked down 5 points by some of the leading jobbers, this action being more or less predicated on the easier offerings being quoted by mills. Quotations by one leading warehouse, are 3.49c on steel bars, and 3.59c on shapes and plates. Even lower prices are being quoted in some quarters, but the volume of business transacted at these figures still represent a relatively small portion of the total amount placed. On steel bars, prices have been heard as low as 3.00c although at least in some cases it is understood that the material involved was somewhat in the nature of seconds and was sold as such, consisting of foreign bars which had been rejected upon arrival here by consumers. Trading in the local warehouse market is not as active as it was, this being attributable in part to the strong bids being made by some of the mills for nearby business. The mills lately have offered delivery within two weeks on relatively small lots.

Further Shading Develops

Philadelphia, April 8.—Warehouse demand here for iron and steel products shows some increase over preceding weeks. The price situation is weak with extensive shading being done. It is estimated that the quoted prices are being done on about 50 per cent of the market business while some shading is as much as $9 a ton under stated quotations.

Jobbers have changed the dividing line covering the high and low prices of black steel hoops. For hoops ¾-inch and wider the price now is 4.27c base Philadelphia warehouse, while for hoops narrower than ¾ inch the price is 4.77c. These prices apply irrespective of gages.

April Sales Broadening

Cleveland, April 8.—April sales of iron and steel products from warehouses aggregate a better volume than either March or February, but the general demand expected at this season has not materialized. The opening of weather is expected to stimulate building steel sales. Stock prices show no further weakness other than the customary shading for attractive tonnages. Mill prices although weaker have not altered the general warehouse schedules as yet.

Better Trading Being Done

Detroit, April 8—Iron and steel jobbers report trade fair with prices holding steady on all grades. March business was better than most expected. Sales for current delivery are increasing. Stocks are larger than usual mills fulfilling contracts earlier than jobbers had anticipated. Inquiries for light structural shapes continue to grow with clearing weather conditions. Buying of bars and bands continues of good volume although individual tonnage is small.

Plate Prices Are Lower

Offers at 2.10c, Pittsburgh, Made On 40,000 Tons of Plates, Shapes and Bars for Railroad Cars—Small Lots Moving at 2.25c to 2.35c

PLATE PRICES, PAGE 955

Philadelphia, April 8.—It is understood as low as 2.10c, Pittsburgh, was quoted on 40,000 tons of plates, shapes and bars for Chesapeake & Ohio railroad cars. Keen interest in this business brought out a large attendance at Richmond last Wednesday. No action has been taken on this business, but it is expected the road will place the cars with car builders and let the latter buy the steel. Current business here is fair, comprised entirely of small and moderate lots for quick shipment. Eastern mill operations are averaging 50 to 55 per cent. Current prices range from 2.15c to 2.25c, Pittsburgh, on carload business. The Stacey Mfg. Co. has booked a gas holder for the United Gas Improvement Co.

Buyers' Interest Lagging

Pittsburgh, April 8.—With most of the car builders' requirements covered interest in plates is lagging, although a few gas holders, oil storage tanks and other items requiring plates are up for consideration. A 3,000,000-cubic foot gas holder for Memphis, Tenn., involving approximately 1200 tons of plates and 400 tons of shapes was let this week to the Riter-Conley Co. One or two other gas holders are scheduled for early letting. A Chicago fabricator took one or two individual 55,000-barrel oil tanks in the New England territory involving 200 tons each, on which Pittsburgh fabricators figured. Practically no groups of tanks are up for attention, although three or four are expected chiefly from the McCorkle Pipe Line Co., the Texas Co., the Anderson-Prichard Oil Co., Oklahoma City, Okla., and the Prairie Oil & Gas Co., Independence, Kans. The plate department of the Carnegie Steel Co., still is operated at about 90 per cent of capacity, and one or two of the larger independents are busy, although at not so high a rate. Prices are quoted at 2.40c to 2.50c, Pittsburgh, Preferential customers taking large tonnages are able to close at slightly less. The five steel maneuver boat hulls wanted by the United States engineers at Louisville, Ky., will not require more than 50 tons each. Bids close April 28.

Lower Prices Are Named

Cleveland, April 8.—A weakened condition of prices has been more pronounced the past week. More producers where they really desire a piece of business will do 2.30c or 2.35c, Pittsburgh and only miscellaneous orders of the smaller sort now are bringing 2.40c, Pittsburgh. The lowest price yet to appear in this territory was that of 2.25c, Youngstown or 2.345c, delivered Cleveland, made by a Youngstown producer in the bidding for about 1150 tons of tank steel for the Big Four railroad for second quarter delivery. A Cleveland mill quoted 2.35c, Pittsburgh, equivalent in the particular instance to 2.38c, Cleveland, while a leading Pittsburgh independent named 2.35c, Pittsburgh. The market shows various inconsistencies for while even small lots of tank steel have been done this week at 2.30c, Pittsburgh, the same buyers have paid 2.40c for other lots placed at about the same time. The market has developed nothing important in the way of large tonnages this week. Most of the business is composed of small miscellaneous needs representing a fair total. Some sellers here booked more business in March than in any month in the year.

Outside Maker Cutting

Chicago, April 8.—A maker of plates in an outside district is understood to be seeking business on the basis of 2.50c, Chicago, or $2 a ton under the going price of 2.60c, Chicago, which is being asked by local makers. Competition is less keen because demand for plates has been much lower than that for other finished material. It is not likely that local makers will permit heavy inroads from other districts. In the past week 18,000 tons of plates, shapes and bars were booked by the leading interest for freight car work.

Lower Steel Prices Are Bid to the Big Four

Cincinnati, April 8.—Lower prices on steel were disclosed by the bids which went in last week on the Big Four railroad's shop requirements for second quarter. Awards will be announced April 11. The specifications include 1125 tons of tank plates, 350 tons of shapes, 40 tons of sheets, 10 tons of bars, approximately 75 tons of axles and a quantity of nails and barbed wire. On the plates, the Youngstown Sheet & Tube Co. quoted 2.34½c, delivered Cleveland or 2.25c, Youngstown. The Inland Steel Co. quoted 2.60c f.o.b. Indiana Harbor on the plates and 2.65c on the shapes, while the Carnegie Co. bid 2.61½c, f.o.b., Cleveland on the plates, shapes and bars. The Otis Steel Co. quoted 2.66c, Beech Grove, Ind., on the plates which is equivalent to 2.35c, Pittsburgh and 2.38c, Cleveland and the Jones & Laughlin Steel Corp., 2.35c, Pittsburgh, on plates, shapes and bars. The Lukens Steel Co. quoted 2.71½c delivered Cleveland on the plates, the Bethlehem Steel Co., 2.71½c, base Cleveland on the plates and shapes and 2.61c on the bars. The Republic Iron & Steel Co. quoted 2.40c, Pittsburgh on the plates, shapes and bars. The Illinois Steel Co. named 2.68c, base Kankakee, Ill., on the plates, 2.68c, on the structural shapes and 2.69½c on the structural beams and channels. On the nails the regular price was quoted, while the American Steel and Wire Co. quoted 3.75c, Cleveland on the barbed wire.

Officials of the Trumbull Steel Co., Warren, O., report that February business was the best in nearly a year. Net earnings for the month were about $400,000. Shipments in February totaled 34,000 tons. Indications are that first quarter business will reach $1,000,000.

Concrete Market Quiet

Numerous Small Tonnage Projects Continue To Be Let But Large Awards Are Few—Spring Building Programs Not Yet Under Way

REINFORCING BAR PRICES, PAGE 955

Chicago, April 8.—Some of the larger reinforced concrete bar jobs that have been pending are showing signs of developing into actual business. The letting of the general contract for the new Palmer House should release the 1500 tons of reinforcing bars in this job. Similar action seems to impend concerning the Stevens hotel, requiring a like tonnage of bars. The Bourne-Fuller Co. came into this territory last week and took the 400 tons of bars in the Atlantic & Pacific company warehouse. A local warehouse has taken 480 tons for a factory in Chicago, but is not yet ready to announce it. An award is expected daily on the 800 tons in the Soo Line ore dock at Ashland, Wis. Much unsteadiness exists as to price. The 3.00c price exists now only on small jobs. A quotation of 2.75c, warehouse, comes closer to representing the present market. Uncertainty exists as to the mill price of billet bars to the warehouses in view of the weakness to the East.

Demand Is Broadening

New York, April 8.—Concrete demand is broadening out slightly with the approach of spring, but buying continues to lack volume. Prices are unchanged. Mill shipments are quoted at 2.30c to 2.40c, base Pittsburgh. Pittsburgh warehouse prices range from 2.50c to 2.75c base. Prices out of New York stock are around 3.10c base.

Action Still Deferred

Pittsburgh, April 8.—Action is deferred on many concrete bar projects in this district. In some cases revised bids are being asked. Purchasers are endeavoring to obtain the lowest price possible and knowing that some sellers lack business are pressing their positional advantage to the limit. Base prices are unchanged at 2.30c to 2.40c, Pittsburgh, although at times certain differentials are waived. The H. K. Ferguson Co., Cleveland, received the general contract for a plant for the Wolverine Supply & Mfg. Co., Pittsburgh, involving 150 tons. Considerable road work is coming up for attention although most lots awarded to date by the Pennsylvania state highway commission involved 25 or 30 tons.

Activity Still Limited

Cincinnati, O., April 8.—Activity in the reinforcing bar market is confined largely to jobs taking small tonnages, no new inquiries of size having been brought out last week. The aggregate of awards continues fairly steady, although under normal. Bids are in on the new addition to the stadium at the University of Cincinnati, which will require approximately 150 tons. Plans are being prepared by Garber & Woodward, architect, for an 8-story apartment building to be built at Lawrence and Pike streets. It will be of reinforced concrete and brick and the estimated cost is $550,000. The price on new steel bars continues at 3.50c to 3.60c, Cincinnati warehouse, although the Pollak Steel Co. is quoting 2.30c, Marion, O., base, on steel carbon bars.

Many Small Jobs Active

Cleveland, Aprl 8.—Numerous projects calling for from 20 to 60 tons of reinforcing bars are being figured but few buyers now are in the market for larger tonnages. Bourne-Fuller Co. was awarded 400 tons for the Atlantic & Pacific Stores Co. warehouse, Chicago. Several large projects are out but closing action is not expected soon. Architects' boards still are crowded with the spring building program but many jobs are in the speculative stage. New steel bar prices show a tendency toward 2.30c, Pittsburgh, again with the 2.40c quotation almost disappeared. Rail steel quotations remain at 2.10c, mill, with little tonnage out to test the price. Warehouse bars continue to go at 2.60c to 2.75c, Pittsburgh, with most of the tonnage moving at the former figure.

CONCRETE CONTRACTS PLACED

Awards this week	**3,823 tons**
Awards last week	**3,190 tons**
Awards two weeks ago	**2,590 tons**

1000 tons, new Hotel Duluth at Duluth, Minn., to American System of Reinforcing, Milwaukee office. M. Tullgren & Sons, architect, Milwaukee.
650 tons, building for Mt. Vernon-Woodbury mills, Tallahassee, Ala., to Concrete Steel Co.
400 tons, Atlantic & Pacific Co. warehouse, Chicago, to the Bourne-Fuller Co.
400 tons, building for Mohawk Carpet Mills, Amsterdam, N. Y., to Kalman Steel Co.
400 ton, Illinois road work, to the Kalman Steel Co.
310 tons, addition to Homewood, Pa., plant of Westinghouse Electric & Mfg. Co., to the Kalman Steel Co.; given last week as awarded to an independent steel company.
280 tons, building for Williamson Candy Co., Chicago, to the Barton Spider-Web System.
260 tons, St. Margaret's hospital, Hammond, Ind., to Concrete Steel Co.
250 tons, building for International Motor Co., Plainfield, N. J., to Concrete Steel Co.
183 tons, Sheridan Trust & Savings Bank building, Chicago, to Jos. T. Ryerson & Son.
140 tons, Lake Cushman power project, Seattle, to A. Guthrie & Co., Portland, Oreg.

CONCRETE CONTRACTS PENDING

1500 tons, Palmer House, Chicago; being figured now.
1500 tons, Stevens hotel, Chicago; being figured now.
1200 tons, hospital at Mt. Clemens, Mich.; specifications not yet prepared.
1000 tons, Beck's Run bridge, Pennsylvania railroad, St. Clair borough, Pittsburgh; bids being tabulated.
800 tons bars and 78 tons spirals for Snelling-Mendota bridge, Minneapolis; bids taken April 7 by Hennepin county.
500 tons, Nugent Dry Goods Co., St. Louis; pending.
300 tons, three bridges, crane bridge No. 27 over Chartiers creek; West bridge No. 15 over Pike Run, and Gamble bridge No. 18 over Chartiers creek; bids close April 23 at office of T. J. Underwood, county controller, Washington, Pa.
273 tons, Mankato, Minn.; bids in.
150 tons, building for the Wolverine Supply & Mfg. Co., Western avenue, Northside, Pittsburgh; general contract awarded H. K. Ferguson Co.
100 tons, building for W. F. Hall Printing Co., Chicago; bids in June 1.
100 tons, addition to Orrington hotel, Evanston, Ill.; bids to be asked shortly.
Tonnage unstated; two 101-foot spans, with two 37-foot piers and two 25-foot abuttments, for bridge at East St. Louis, Ill.; bids in April 22.

Large Pipe Lines

Contracts About To Be Placed—Cast Buying Is Heavier

PIPE PRICES, PAGES 955 AND 1014

Pittsburgh, April 8.—Interest among tubular goods buyers in the oil fields is mounting as the season advances and oil well drilling is becoming more extensive. Confirmation of the placing by the McCorkle Pipe Line Co. of its 870-mile line for Oklahoma-Texas is lacking although that this will be awarded this week is accepted. It involves a somewhat smaller tonnage than at first was estimated and probably will line up approximately as follows:

Mileage	Size in inches	Pounds per foot	Approximate tonnage
155	10	41.6	10,050
510	8	29.2	39,850
130	6	19.3	6,650
25	4	10.9	725
50	3	7.6	1,000
870			58,275

It is understood that the Texas Co. order for approximately 80,000 tons of line pipe is not far off and two from the California fields for 125 and 400 miles respectively, also are pending. Miscellaneous oil country goods orders are coming in at the rate of one to three or four per day involving one to three carloads apiece, with an occasional larger lot, mostly from jobbers. Standard full weight merchant pipe buying is likewise extensive in the aggregate although individual orders continue small. Buttweld furnaces are being operated practically at capacity in this and in the Youngstown, O., and Wheeling, W. Va., districts. Purchasers generally have business for five to seven weeks ahead. Boiler tubes are slow and subject to some price concessions although other tubing is fairly firm.

Municipal Demand Lacking

New York, April 8.—Lack of municipal demand on anything like the scale anticipated by sellers earlier in the year continues pronounced in the local cast iron pipe market. With the exception of a lot of 2000 tons placed with the Donaldson Iron Works through a general contractor for a local job public buying has been at a virtual standstill, and with little or nothing in the way of new inquiry. Private buying still is holding up well, and at most plants operations are being well maintained. Prices are steady.

The Texas Co. is inquiring for 80,000 tons of steel for a pipe line from the Oklahoma oil fields to Port Arthur, Texas.

Bond Issues Now Up

Chicago, April 8.—At the moment the interest of the cast iron pipe market centers upon the numerous bond issues upon which many municipalities in the Middle West are voting. The success of these issues should be reflected in buying late in April and early in May. Among jobs which are expected to be awarded shortly are 5446 tons at Chicago, 320 tons at Rock Island, Ill., 100 tons at Michigan City, Ind., and 1200 tons for Ashtabula County, O. The United States Cast Iron Pipe & Foundry

Co. bid $58.20, Chicago, upon the city of Chicago tonnage split up into three jobs; for the 5446 tons as one job it bid $57.20, Chicago. Of this total, 940 tons was for 30-inch pipe and the remainder 48-inch. Milwaukee opened bids today on 3295 tons. Metropolis, Ill., will open bids on April 24 instead of April 17 on its waterworks improvements. The quotation on 4-inch pipe continues $61.20 to $62.20, Chicago, and on 6-inch and over $57.20 to $58.20, Chicago.

Trade Opening Up in South

Birmingham, Ala., April 7.—The cast iron pipe trade is opening up. Municipalities are now in the market for considerable tonnage of gas and water pipe. Capacity production of local plants is assured. No change is announced in the quotations for cast iron pipe. The present lull in the soil pipe and fittings market is expected to be temporary.

CAST IRON PIPE PLACED

2000 tons, water department of New York, through Kelly Contracting Co., to the Donaldson Iron Works.
1350 tons, River Grove, Ill., to American Cast Iron Pipe Co.
1200 tons, Milwaukee, to American Cast Iron Pipe Co.
261 tons, Quincy, Ill., to American Cast Iron Pipe Co.
250 tons, Price, Utah, to American Cast Iron Pipe Co.
240 tons, Rome, Ga., to American Cast Iron Pipe Co.
125 tons, St. James, Mo., to American Cast Iron Pipe Co.
106 tons, Abilene, Tex., to American Cast Iron Pipe Co.

CAST IRON PIPE PENDING

100 tons, heavy fittings for Chicago; bids in.
100 tons, city of Chicago, special fittings; bids in.

Esch Opposes Railroad Rate Revision

Washington, April 8.—General railroad freight rates are satisfactory to shippers and carriers and a revision as recommended by President Coolidge in his annual message might check industrial prosperity, John J. Esch, member of the interstate commerce commission, told the house committee on interstate and foreign commerce. He was asked to give his advice on a resolution introduced by Congressman Homer Hoch, Republican, Kansas, directing the commission to make a survey. The commissioner suggested that rates be revised only in particular situations where there is "sound ground and necessity."

"Were it not for the adverse economic situation of agriculture," he said, "apparently little or no freight rate agitation would exist." He told the committee that since the rate reduction of 1922 there has been a general revival of business and industry. "The only inference fairly to be drawn," he said, "is that recent experience does not demonstrate the necessity for a revision."

German Fluorspar Sold

New York, April 8.—Considerable tonnage of German fluorspar is selling in this territory around $15 per net ton, plus duty of $5 per ton. This material runs 88 per cent minimum calcium fluoride and 6 per cent maximum silica.

Sheet Prices Are Weaker

Mills Needing Tonnage Offering Concessions of $2 to $3—Lull Believed Seasonal—Argentine Inquires for 43,000 Tons

SHEET PRICES, PAGE 955

Pittsburgh, April 8.—Expectations are general in the sheet industry that before the end of the month a better buying rate will develop for practically all grades. It is claimed that the backward tendency among buyers, apparent for a few weeks past, is traceable to the bad weather conditions prevailing in many localities. This has been the experience of the majority of the independent producers and applies to nearly all grades. This is demonstrated by the willingness of makers to offer concessions of $2 or $3 per ton under the prices maintained by the American Sheet & Tin Plate Co., 3.00c, 3.85c, 5.00c and 5.35c, respectively, on blue annealed, black, galvanized and full-finished automobile sheets. The minimum on blue annealed developed in the market is 2.85c, although the price generally quoted is 2.90c. While one or two buyers claim to be able to purchase black sheets at 3.70c, this has not been confirmed, the common price on black being 3.75c. Some of the manufacturers who are willing to shade the black sheet price will not go below 5.00c on galvanized. However, 4.90c is obtainable in several directions from those needing work for their galvanizing departments. The full-finished price, 5.35c, is seldom departed from although at least one large automobile interest purchased a large quantity for second quarter at 5.10c, Pittsburgh. It may have difficulty duplicating that figure on further purchases if they are necessary. Some full-finished second quality sheets are offered at 3.75c instead of 5.35c less 10 per cent. The 3000 or 4000-ton lot involved has been pressing the market for several months. Some further buying by automotive interests is expected this week for May, or May-June shipment. Domestic order receipts of the leading interest so far in April compare favorably with March which was the best month in five, incoming business then being at 96 per cent. Some sheet orders for all-steel box cars came in this week, one involving 6700 tons. Export business, particularly in galvanized sheets, keeps up well mostly in small tonnages. Doubt is expressed here that the inquiry from the Argentine Republic for approximately 43,000 tons of 18 x 59-inch galvanized sheets for locust traps will develop into an order. The order would represent an investment in excess of $7,500,000.

Valley Market Dull

Youngstown, O., April 8.—Consumers of common sheets continue to delay purchasing, and the market here is dull. Whether the industry faces a quiet period or whether the lull will be of short duration is difficult to forecast. While the softness in the price structure has undermined the sales policy of the majority of independent producers this has failed to awaken buying interest. The going market ranges from 2.85c to 2.90c on blue annealed, 2.75c on black and 4.90c on galvanized, Pittsburgh. While some jobbing interests are credited with a price of 4.85c on galvanized this figure lacks substantiation. No large tonnage for any grade of sheets is under negotiation at present. The largest inquiry before the trade does not exceed 150 tons. The majority of current requirements average about a carload. Operating schedules average 81 per cent, the tonnage coming off the mills in this district now surpassing the volume of unfilled tonnage. Dullness in the high-grade sheet market is more pronounced, and this, together with an increase in the number of holdup requests, has made it necessary in some cases to curtail mill schedules. Quotations continue unchanged at 5.35c for No. 22 gage, Pittsburgh.

Competition Is Keener

Chicago, April 8.—Competition for sheet business in the Chicago district has become acute and the range of prices in this district now is 2.90c to 3.00c, Pittsburgh, for blue annealed 3.75c to 3.85c for black and 4.90c to 5.00c for galvanized. The Japanese were inquiring for light gage black sheets a few days ago but the business was not attractive. One maker is well booked for the second quarter.

Bookings Are Smaller

Philadelphia, April 8.—Sheet bookings continue fair, but generally the volume is somewhat smaller. Eastern sheet mills are operating at 75 per cent, average. Prices are 2.90c to 3.00c, Pittsburgh, for blue annealed; 3.75c for black; 4.90c for galvanized.

Japan Places Small Lots With American Mills

New York, April 8.—Mitsui & Co., have placed an order with the United States Steel Products Co. for 400 tons of ¾-inch gas pipe for the city of Tokio. An order for 800 tons of gas pipe for Tokio still is pending.

Mitsui & Co., and Suzuki & Co. each have placed 200 tons of car building material for the South Manchurian railways with the United States Steel Products Co. This leaves 400 tons still pending.

Several inquiries have come from Japan for black sheets, but it is believed that they have been put out principally for the purpose of developing the current market prices. The usual quotation is $106, c.i.f. Kobe, for No. 27 gage black sheets, but it is understood that lower has been quoted.

An inquiry is out for a large tonnage of galvanized sheets for Argentine, reported as 43,000 tons.

The Charcoal Iron Co., of America, Detroit, will call $100,000 of its first mortgage 8 per cent bonds at 111.94 on May 1. This will total $500,000 of the original issue floated in Nov., 1921, which will have been retired, leaving $3,500,000 outstanding.

Structural Sales Steady

Large Tonnage Awards Are Few but Aggregate of Weekly Business Is Maintained—Canadian Bridge Requirements Estimated at 25,000 Tons

STRUCTURAL SHAPE PRICES, PAGE 955

New York, April 8.—Structural business continues restricted, although a substantial tonnage is pending. This may be attributed in a measure to the better than normal buying during the winter months. Bridgework continues a feature, a leading award calling for 1400 tons for bridges for Maine Central. A bridge involving 25,000 tons, is to be erected over the St. Lawrence river, at Montreal, but is attracting American shapemakers much more than the fabricators, owing to the additional *ad valorem* duty on fabricated material, which virtually eliminates competition of American fabricators. The Norfolk & Western and New York Central are expected in the market shortly for substantial tonnages for additional bridgework. The market on plain shapes may be quoted at 2.40c to 2.50c, Pittsburgh, with concessions available on large tonnages.

Orders All Are Small

Philadelphia, April 8.—Structural shape orders are somewhat more numerous but the average of individual projects is small. The tendency of order books is to shrink but on the whole shape bookings are maintained at a better rate than those of other heavy steel products. Prices continue 2.20c to 2.30c, Pittsburgh. Fabricators report less structural inquiry than usual during recent months.

Awards Drop, Inquiry Holds

Boston, April 8.—Total building awards of last week in New England showed a decline for the first time in several weeks and steel companies report a slight falling off in the general demand for shapes. New projects and inquiry are holding up well. Bids close today for 8900 tons for the Statler hotel. Several bridge projects, hospital additions, and school houses bring the total up for figures to a sizable tonnage. The leading producers are holding firm at 2.35c, Pittsburgh, but one or two of the smaller independents are quoting 2.30c. Plates are offered freely at 2.25c, Pittsburgh.

Buying Movement Expected

Cincinnati, April 8.—A decidedly better tone is noticeable in the local structural market. Inquiries and orders continue to come in larger volume and the present situation bears all the signs of a genuine revival of buying. New work planned for early summer includes many fairly large tonnage jobs, prominent among them being the new First National Bank at Huntington, W. Va., which calls for about 1500 tons. The *Columbus-Dispatch*, Columbus, O., will build a new home, plans for which are being prepared by Schneider, Babbitt & Matthews, architect, Columbus. Bids will go in April 14 on the addition to the warehouse of the Bourne-Fuller Co., in this city. The C. M. Scully Construction Co. is the low bidder on the new Gest street bridge, Cincinnati, which will require about 125 tons. Announcement of the award of 500 tons for the new tank shop of the Davis Welding Co., Cincinnati, is expected shortly. Plain material prices are softer and range from 2.35c to 2.50c, Pittsburgh.

Market More Inactive

Cleveland, April 8.—The structural shape market last week was inactive. Outside of a few small tonnage awards and the letting of 350 tons to Van Dorn Iron Works for the St. Mary's Seminary, few contracts were placed. Large projects are in the speculative stage but few are expected to materialize this spring. Considerable interest is being taken in the Liberty bank building, Buffalo, N. Y., requiring 4100 tons. It is reported that John Gill & Sons is the probable contractor. The general contract for the Euclid Oliver building requiring 1200 tons is expected to be let next week. Inquiry on small tonnage lots continues at fairly good volume. Plain material prices show some weakness with attractive tonnages being able to obtain a 2.35c, Pittsburgh quotation, making the spread 2.35c to 2.50c, Pittsburgh. With the exception of a few shops which are hungry for work fabricated quotations are well maintained.

Many Fabricators Need Work

Pittsburgh, April 8.—That many fabricating shops in the Pittsburgh area are in need of work is indicated by some of the bids being filed on material fabricated and erected. Competition is keen on jobs even where moderate tonnages are involved. Small projects are exceedingly numerous in this immediate vicinity and the successful bidders say that there is more profit in them than in the larger work where bidding is so keen. Several awards are noted this week involving fair sized tonnages. The general contract for the high school at Washington, Pa., went to Carl Shimp, Martins Ferry, O., but the steel, about 200 tons, has not as yet been placed. Inquiries are fairly numerous and estimating departments are kept busy. T. J. Underwood, county controller, Washington, Pa., will take bids until April 23 on two bridges requiring about 100 tons each. Structural shape prices are unchanged at 2.40c to 2.50c, base Pittsburgh.

Large Awards Nearer

Chicago, April 8.—General contract for the new Palmer house, requiring 17,000 tons of structural material, has been awarded to the Thompson-Starrett Co. Local fabricators headed by the Morava Construction Co. and buying their steel from the Inland Steel Co. are making a strong bid for this tonnage. The award of the Stevens hotel, for which the George A. Fuller Co. is understood to be the probable contractor, is near a decision; this is a 15,000-ton job.

Bids go in Thursday on 3500 tons for harbor work at Los Angeles. Two jobs at New Orleans totaling 2200 tons are near award. March building permits in Chicago total $26,712,900 compared with $30,371,477 for that month of 1923. For the first quarter of this year permits aggregate $63,182,967 compared with $71,577,647 for the like period of 1923. The price of plain material, like that of bars and plates, reflects the unsteadiness in nearby producing districts. If any change in price is made it will be due to this condition rather than a lack of demand, although erected prices reflect the hungry condition of smaller fabricators. The plain material price of the two leading producers continues 2.50c to 2.60c, Chicago.

STRUCTURAL CONTRACTS PLACED

Building awards this week..... 15,731 tons
Building awards last week ..... 38,960 tons
Building awards two weeks ago... 41,991 tons

5000 tons, Florida East Coast bridge at Jacksonville, Fla., to the Phoenix Bridge Co.; through typographical error this project was mentioned in last week's issue as awarded to another fabricator.
2200 tons, substations and transmission towers for the Ohio River Edison Co., Toronto, O., to the American Bridge Co.
1600 tons, (75 per cent plates) 3,000,000-cubic foot gas holder for Memphis, Tenn., to the Riter-Conley Co.
1400 tons, two bridges for the Maine Central Railroad, to the American Bridge Co.
1400 tons, building for the knit goods trade, Broadway and Worth street, New York, to Levering & Garrigues Co.
1000 tons, Frank & Frank loft building, 327 West Thirty-sixth street, New York, to Paterson Bridge Co.
900 tons, Belmont avenue viaduct, Youngstown, O., to McClintic-Marshall Co.
850 tons, high school, Hartford, Conn., to Eastern Bridge Co.
750 tons, Alexander Hamilton hotel, Paterson, N. J., to Paterson Bridge Co.
720 tons, foundry addition, Lunkenheimer Co., Elmwood, O., to J. E. Moss Iron Works.
600 tons, Stockton Savings Commercial Bank building, Stockton, Cal., to California Steel Co.
570 tons, carpenter shop for Detroit Street railways, Detroit, to Russell Wheel & Foundry Co.
516 tons, bridge at Clarksville, Tenn., to the Nashville Bridge Co.
475 tons, 112 tanks for Union Oil Co., Seattle, to Seattle Boiler Works and West Coast Iron & Steel Works.
400 tons, addition to school No. 97, Brooklyn, N. Y., to Communipaw Steel Co.
350 tons, Wentworth school, Chicago, to the Union Foundry Co.
350 tons, St. Mary's Seminary, Cleveland to Van Dorn Iron Works.
300 tons, addition to the Hell Gate power station, New York, to the American Bridge Co.
250 tons, building for the L. H. Rutherford Co., Washington, Pa., to the John Eichleay Jr. Co.
200 tons, addition to Massachusetts General hospital, Boston, to New England Structural Co.
150 tons, Michigan Terminal warehouse, Detroit, to Whitehead & Kales Iron Works.
150 tons, addition for Maynard Electric Steel Casting Co., Milwaukee, to Milwaukee Bridge Co.
100 tons, 64,000 structural T-bars for Jones Island sewage disposal plant at Milwaukee, to Worden-Allen Co.
100 tons, state building at Glenwood, Iowa and school building at Boone, Iowa, to Des Moines Steel Co.
100 tons, addition to Sterling Engine Co., Buffalo; to R. S. McMannus Steel Corp.
100 tons, reconstruction work on Herrs Island bridge over the back channel, Allegheny river near Pittsburgh, through the Farris Engineering Co., to the Pittsburgh Bridge & Iron Works.
100 tons, building fo rthe Brown-Kindle Co. Parkersburg, W. Va., to the Pittsburgh-Des Moines Steel Co.
100 tons, powerhouse for the Great Western Paper Co., Ladysmith, Wis., to the Worden-Allen Co.
Tonnage not announced, gas holder, Iron County Public Service Co., Fort Jervin, N. J., to Stacey Mfg. Co.
Tonnage not stated, 1800-foot bridge costing $500,000 at Ellensburg, Wash.; plans under consideration.

STRUCTURAL CONTRACTS PENDING

25,000 tons, bridge over the St. Lawrence at Montreal, Que.; engineers' estimates asked.
15,000 tons, Carquinez straits bridge, near San

Francisco; bids being received.
8900 tons, Statler hotel, Boston; bids in. Previously announced as 7000 tons pending.
2500 tons, three bridges at Buffalo; bids being tabulated.
2335 tons, Ross Island bridge, Portland, Oreg.; Parker & Manfield Co., low bidder with quotation of $2,035,316.
2200 tons, Knights of Columbus building, Brooklyn, N. Y.; pending.
1850 tons, Burnside bridge, Portland, Oreg.; Pacific Bridge Co. low bidder with quotation of $2,340,173.
1500 tons, apartment house, Philadelphia; pending.
890 tons, Woodward-Wight Co. building, New Orleans; bids in.
850 tons, two plant additions for the General Electric Co. at Pittsfield, Mass.; bids asked.
700 tons, municipal bridge, New York; Bethlehem Steel Co. low with a bid of $142,000.
700 tons, Fred T. Ley office at 20 East Fortieth street, New York; pending.
500 tons, bridge for the Pennsylvania railroad in Ohio; pending.
500 tons, substation for the Edison Electric Co., Boston; bids asked.
450 tons, Sellwood bridge, Portland, Oreg.; Union Bridge Co. low bidder with quotation of $377,500.
350 tons, Bell Telephone exchange, Philadelphia; bids asked.
300 tons, coal pulverizing plant, Middletown, O.; pending.
200 tons, high school at Washington, Pa., general contract awarded Carl Shimp, Martins Ferry, O.
200 tons, bridges No. 6 Venice bridge over Miller's Run, and No. 16 Avella bridge over Cross Creek; bids taken until April 23 by T. J. Underwood, county controller, Washington, Pa.

Wire Bookings Easy

In Spite of Agricultural Buying Being Slow Deliveries Continue Deferred

WIRE PRICES, PAGE 955

Pittsburgh, April 8.—Although unfilled orders for wire products are not as large as makers would desire, they are comfortable and a pleasing day-to-day business is being done. Individual orders are small and for the most part come from jobbers needing replacements. Some small town jobbers report the backward season and poor roads have hurt sales. Small nails and some kinds of wire continue active and on these products deferred deliveries are being named. Prices for the most part are firm although it is understood some larger buyers were able to obtain a figure under 2.75c base Pittsburgh, on plain wire and 3.00c base Pittsburgh, on wire nails. Where southern Ohio nails enter into competition with the Pittsburgh product, freight rates are being equalized.

Demand Continues to Lag

Chicago, April 8.—Weather conditions the past week have improved and give promise of increased farmer buying. General demand for wire and wire products in the past week was slightly greater than in the preceding week, but left much to be desired. Railroads are fair buyers of barbed wire and nails. A few orders filtered in from freight car builders. Prices and operations are unchanged.

To Improve Plant

Philadelphia, April 8.—The Alan Wood Iron & Steel Co., through Drexel of this city is floating a bond issue of $3,500,000 Of this amount $2,500,000 will be used to retire notes and indebtedness and the remainder will be devoted to the improvements of the company's plants at Swedeland, Pa., and Ivy Rock, Pa.

Railroad Market Inactive

Few Orders for Equipment Being Placed—Odd Lots of Rails and Track Accessories Booked—Several Roads Yet To Close on 1924 Requirements

RAILROAD TRACK MATERIAL PRICES, PAGE 955

New York, April 8.—While nothing like the total number of freight cars placed in February, business in March involved largest number of cars of any month, with the exception of the preceding one, since March, 1923, the amount being 13,145. Locomotive buying appears to have compared favorably with the business of the preceding month, although full returns have not as yet been made. Total locomotive orders for the first three months of the year to date slightly exceed 500. This total, builders estimate, is about 500 less for the period than the accustomed ratio that has been maintained in the past between locomotive and car orders. Following is a comparative statement of car awards over the past several months:

March	13,149
February	41,396
January, 1924	8,151
December	11,600
November	5,050
October	1,125
September	897
August	2,777
July	1,450
June	1,785
May	2,200
April	9,800
March	42,499
February	9,300
January, 1923	15,000
1923 total	102,483

Current car buying is rather slack, with the decision of the Western Fruit Express to build 1000 refrigerator cars in its own shops an outstanding item. Locomotive buying is featured by the award of 10 locomotives for Canadian Pacific to the Canadian Locomotive Co.

The Rock Island has ordered 10 locomotives from the American Locomotive Co. Both the Pennsylvania and the New York Central are expected to buy passenger locomotives soon. The New Haven is inquiring for 15.

Rail Mills Booked For Quarter

Pittsburgh, April 8.—Carnegie Steel Co. is well filled up for the present quarter with light rail business, but independent producers are not so comfortably fixed. The leading interest is filled up to July 1 on standard rail business. Makers of light rails from billets have not departed from the 2.00c base Pittsburgh price although some rail-steel light rails were sold at as low as 1.85c last week. Only a few inquiries are coming to independents for carload lots and in some cases buyers want less-than-carload quantities.

The Great Northern railway has not closed on its inquiry for 2000 tons of tie plates. One inquiry from the source received here specifies 1925 delivery; another calls for April and May shipments this year. The Pennsylvania railroad continues to buy intermittently both tie plates, spikes and track bolts. Prices all are unchanged although in connection with standard spikes some effort is being made to obtain 3.15c on small orders, the going market level being 3.00c, base Pittsburgh. Tie plates are quoted at 2.55c to 2.60c, base Pittsburgh, and standard track bolts at 4.00c base Pittsburgh.

Placements Are Light

Chicago, April 8.—Practically no freight cars were placed or inquired for in the Chicago district in the past week. Orders for steel rails were confined to small fill-in lots. Track fastenings sales were fair in the aggregate. The leading maker took 3500 kegs of spikes and 1000 kegs of bolts from one carrier, 2500 kegs of spikes and 1500 kegs of bolts from another and 800 tons of tie plates from a third railroad. Prices of track fastenings are unchanged. Light rails are quoted nominally at 2.25c mill.

CAR ORDERS PLACED

Great Northern, 250 ore cars, to the Bethlehem Steel Co.
Pacific Electric Railway Co., 50 street cars to the J. G. Brill Co. and 14 to the St. Louis Car Co.
Santa Fe, 40 coaches, to The Pullman Co.
Southern railroad, 250 gondolas, to Tennessee Coal, Iron & Railroad Co.
Western Fruit Express, 1000 refrigerator cars, to own shops.

CAR ORDERS PENDING

Boston Elevated, eight subway cars; bids asked.
New York Central, 28 or more horse cars; pending.
Union Carbide Co., six tank cars; bids asked.

Rebuilding Ovens

Work on the reconstruction of 51 by-product coke ovens of the Otis Steel Co., Cleveland, is under way. This work will materially enlarge the capacity of these units and will put the company into a position where it will not need to draw upon the open market for a part of its supplies as it does at the present time. The Otis Steel Co.'s coke plant consists of 100 ovens made by Semet-Solvay Co.

Chain Is Advanced

Pittsburgh, April 8.—The American Chain Co. has announced an advance of $5 per ton in 1-inch chain, marking it up from 6.00c to 6.25c, Pittsburgh. The United States Chain & Forging Co., still is quoting 6.00c but is expected to make a similar advance within a few days.

Enjoys Banner Year

The Chicago Railway Equipment Co., Chicago, enjoyed the best year in its history, as represented by earnings, in 1923, according to President E. B. Leigh in his annual report to stockholders. The number of brake beams shipped during the year was greater than in any other year since 1907. The volume of unfilled orders carried into 1924 was small, the report says, so that the 1924 business will be almost entirely based upon business yet to come. During the past year the company completed a large extension of its Franklin Brake Beam plant.

The Nonferrous Metals

Prices Lower—Markets Watching Foreign Affairs. Especially Dawes Report—Zinc and Tin Ease After Firmness

	Copper Electro delivered	Copper Lake delivered	Spot tin Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Spot nickel
April 2	13.50	13.75	51.25	8.85	6.20	27.00	10.75	28.00
April 3	13.62½	13.75	54.00	8.75	6.27½	27.00	10.62½	28.00
April 4	13.62½	13.75	52.50	8.50	6.32½	27.00	10.50	28.00
April 7	13.62½	13.75	53.25	8.50	6.32½	27.00	10.00	28.00
April 8	13.50	13.62½	51.00	8.50	6.30	27.00	10.00	28.00

†Outside market quotation.

NEW YORK, April 8.—Business has lagged in waiting markets on the eve of the publication of the Dawes report. There has been little buying interest or selling pressure exerted the past week in any of the markets, the weakest showing being made by lead, in contradistinction to the usually relatively strong market for lead.

The abnormally high prices above 9c for lead caused buyers to move extremely cautiously to avoid accumulating high cost stocks and when the market showed signs of slipping the caution increased. In consequence, business has been only for must requirements and has been extremely scattered. The American Smelting & Refining Co. reduced its official contract price $5 a ton or ¼ cent a pound April 3 to 8.75c, New York. Independent sellers dropped their quotations to 8.50c, New York, and to 8.20c, East St. Louis, for prompt, April or May shipment.

The copper market has been quiet, with producers quoting 13.62½c, delivered, on domestic business for prompt and second quarter delivery; 13.75c, c.i.f. foreign port on export business. Lake copper has been quoted 13.75c; casting, 13.37½c. Secondary material has been moving slowly with prices unchanged. Acquisition of a plant in Cleveland by the Nichols Copper Co. to produce blister copper from scrap has been a feature of the secondary trade.

The zinc market was firm, due to reluctance of sellers to compete at present price levels under conditions of inflexible costs as at present created by the pegged ore price, but today it was easy. Demand from galvanizers and brass mills has been slow, reflecting the light bookings of these consumers. The prime western zinc price for prompt and April shipment moved up to 6.32½c to 6.35c, E. St. Louis and then back to 6.30c; high grade is steady at 8.25c to 8.50c; brass special commands 10 points premium over prime western.

Actual spot tin continued to command an abnormally high premium due to the shortage of this position but today the premium was cut and all prices fell. Early delivery tin from steamers now at dock has been offering for practically the same price as future shipments. so the high quotations for spot have no real market significance. April delivery tin prices have ranged from 51c to 52.37½c this week.

Resale lots of 98 to 99 per cent virgin ingot aluminum have been offering this week at 27c, delivered; 99 per cent, 27.50c to 28c. The Aluminum Co. of America has revised its list of extras and basing gages.

Due to the recent heavy offerings from China, the antimony market has broken still further, selling down to 9.62½c, duty paid, this week as against 12c, recently.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min..	21.25
High brass	17.75
Zinc, ga. 9 to 18 (plates ½c less)	9.75
Lead, full sheets (cut ¼c more).	12.25
Aluminum, bright, 0 to 35 gage..	37.50 to 92.00
SEAMLESS TUBES	
High brass	21.50
Copper	22.75
RODS	
High brass, round, ⅜ to 2½-inch	15.50
Naval brass rods	18.25
WIRE	
Copper	15.50 to 16.00
High brass	18.25

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.25 to 9.50
New York	8.75 to 9.00
Chicago	9.00
HEAVY YELLOW BRASS	
New York	6.00 to 6.25
Chicago	6.75
Cleveland	6.25 to 6.50
ZINC	
New York	4.00 to 4.25
Cleveland	3.75 to 4.00
Chicago, dross	4.50
HEAVY COPPER AND WIRE	
Cleveland	10.50 to 11.00
New York	10.25 to 10.50
Chicago	10.50 to 11.00
RED BRASS TURNINGS	
New York	8.00 to 8.25
Cleveland	8.50
Chicago	8.50
YELLOW BRASS TUBING	
Cleveland	6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.25 to 6.75
New York	6.75 to 7.00
Chicago	6.75
ALUMINUM BORINGS	
Cleveland	12.50

By-Products Steady

Demand for Sulphate of Ammonia Light—Toluol Tightens

New York, April 8.—Despite the fact that quotations on coal tar by-products are steady, demand is listless. Possibly the least active item on the list is sulphate of ammonia, for which there is little demand from either domestic or foreign sources. As a result, prices while unchanged, are weak and largely nominal. These prices range from $2.70 to $2.75, works, on material for domestic account, and $2.70 to $2.75, port, in double bags, for export.

Although the situation in toluol and solvent naphtha is inclined to be tight, this is not due to any unusual amount of demand but rather to the heavy quantity of production that is going into motor fuel, and to the inactive demand for industrial benzol. To make a tank lot of either toluol or solvent naphtha, it is necessary to make several of benzol.

Prices on light oil distillates follow: Pure benzol, 25 cents, works, in tanks, and 30 cents in drums; 90 per cent, 23 cents in tanks and 28 cents in drums; xylol, 28 cents, works, in tanks and 33 cents in drums; toluol, 26 cents in tanks and 30 cents in drums, and solvent naphtha, 25 cents in tanks and 30 cents in drums.

While the spring cleaning season is resulting in some last minute demands from the drug trade, naphthalene continues to hold relatively steady at 6 cents, works, for flakes and 7 cents for balls. Phenol may be quoted at 28 cents, works, on contracts and around 38 cents, storage, on spot business.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.29
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	0.38
Naphthalene flake	0.06
Naphthalene balls	0.07
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flakes	0.06
Naphthalene balls	0.07

*Spot distillates are subject to shading.

J. A. Campbell Forecasts Good Business

Youngstown, O., April 8.—Normal and good business for the steel industry is expected by J. A. Campbell, president of the Youngstown Sheet & Tube Co., who has returned from a six weeks trip to the Pacific coast.

"The present slight lull in buying is due to political and not economic causes," Mr. Campbell said. "I expect good business by July 1 and for the third quarter."

Mr. Campbell said that while incoming orders are not up to capacity, they are notwithstanding very fair and that the Sheet & Tube company has a "comfortable" backlog insuring present rate of operations for some time.

While on the coast Mr. Campbell completed the unification of Youngstown Sheet & Tube and Steel & Tube Co. of America sales forces and interests.

Coast Demand Is Active

Portland and Seattle Buying Freely—Much Bridge Work Is Current —32,000 Tons of Scrap in Canada Up for Bids

SEATTLE, April 5.—Spring business is well sustained in this territory. Lumber and logging are less active and this is reflected in iron and steel. But the effect of curtailed operations in lumber centers is not general and as business is good in other directions the situation is fairly satisfactory. Jobbers report turnover last month larger than March 1923 although prices are lower than then.

Several large contracts for steel have been awarded recently and other business is pending. Bids are now being received at San Francisco for 15,000 tons for the Carquinez Straits bridge. Award of 600 tons of structurals for the Stockton Savings Commercial Bank went to the California Steel Co.

The Lake Cushman power project dam will be built for Tacoma by A. Guthrie & Co., Portland, on a bid of $881,190. This involves 140 tons of reinforcing steel. The contract figure is $279,000 under that of the project engineer. Eight bids were submitted.

Bids were opened yesterday for three bridges at Portland, involving one of the largest contracts of the season. The Pacific Bridge Co. was low on the Burnside bridge at $2,340,173. This involves 1500 to 1850 tons of structural steel. The Union Bridge Co. bid $377,500 on the Sellwood bridge, requiring 450 tons. Parker & Banfield Co. bid $2,035,316 on the Ross Island bridge which involves 2334 tons.

Seattle chamber of commerce has decided to begin work in May on its new home to cost $250,000. The Standard Oil Co. has acquired a site for a distributing plant on Lake Union, Seattle. Three 10,000-barrel steel tanks and other necessary storage equipment are planned.

Pig Iron and Coke

The iron market remains firm in sympathy with conditions in Great Britain, which is supplying the bulk of the trade in this territory. Best grades of Glengarnock are quoted at $33.50 duty paid while foundries are still interested in the cheaper grades of continental iron which is being sold here at $26.50. The demand is fairly well sustained although buying has not extended beyond July delivery.

Outside of an order of 500 tons of foreign coke recently arrived the trade is using Fernie mixed with domestic grades. The Allison Coke & Coal Co. has recently reopened its ovens at Orting and is turning out foundry and smelter grades. It is announced that 67 ovens are now operating and the output will shortly be increased from one to five carloads daily.

Bars, Plates and Shapes

There is not much activity in merchant bars, the situation being unchanged from a week ago. Reinforcing material continues in good demand. The local producer is operating at the same capacity as for the last three months. Foreign inquiry is lacking. Structurals are quiet, being firm at 2.80c, c.i.f. Awards are pending for the Pilchuck bridge involving 60 tons and for the Haller, Lincoln and Billingham bridge jobs involving 300 tons. Seattle Boiler Works was recently awarded 112 tanks for the Union Oil Co. This job was shared by the West Coast Iron & Steel Works and requires 475 tons of plates. Western Pipe & Steel Co. received award for 100 tons of lagging for the city's Lake Youngs project and an additional contract for 514 tons is pending.

Finished Material

Sheets are relatively quiet. Rumors are in circulation, but unverified, that less than 5.00c base Pittsburgh has been quoted here on 28 gage galvanized. The price reported is 4.90c but the trade is inclined to think that a 40 cent water rate from the East coast quoted by one of the intercoastal lines is giving some mills the opportunity of cutting competitors' prices.

Old Materials

The scrap market shows no change from a week ago. Interest is lacking and the turnover is small. The principal buyer of steel scrap is paying $10 to $10.50 gross ton and as high as $11 for select grades. Cast iron is weak, the best foundry prices reported this week being $18, dealers buying for considerably under that level.

The municipal street railway, Seattle, will require 600 tons of heavy steel trackage including T rails estimated to cost $420,000, bids to be opened April 11. The city is also in the market for 14,150 feet of steel cable, one 1¼-yard clam shell bucket, five tons of copper, cast iron and mixed iron, and 750 pounds of lead, aluminum and brass. The purchasing agent of the Alaska railroad is advertising for twist drills and other equipment. The city has purchased continuous rail joints for the street railway department from the Rail Joint Co. on a bid of $6294.

All Scrap Markets Lower

(*Concluded from Page* 956)

ered. The cast grades are all dull. Strictly textile machinery has sold at $22.50. A Worcester consumer bought No. 1 machinery at $21.50 delivered.

Decline At New York

New York, April 8.—Scrap quotations have undergone the most sweeping decline in some time. With the exception of a couple of grades all have been marked down anywhere from 50 cents to $1 a ton. Trading, according to most dealers, is the slowest in many weeks, and reflects a lack of substantial new business on the books of consumers. Usually, when a mill books heavy business it enters the market for raw materials immediately, they point out. Among grades particularly affected are heavy melting and No. 1. railroad steel, and borings and turnings. On railroad steel dealers are now paying $15, delivered, Bethlehem. Cast scrap is also very weak, holding at $14.50 to $15, New York, for heavy and $15.50 to $16, for machinery.

New Orders Are Lacking

Pittsburgh, April 8.—Buying of iron and steel scrap is totally lacking, it being practically impossible for scrap dealers to get in shipping notices except on old orders. Prices are weaker although not yet low enough to buy profitably to put the scrap down in yards. While many grades are $1 or $1.50 per ton lower than a week ago, further recessions are expected before the turn upward although a large tonnage of heavy melting steel could not be bought at the quoted price of $17 to $17.50. The specialties on the recent Pennsylvania list brought $20.75, Vandergrift, apparently to apply on an old order. A large purchaser of specialties in Pittsburgh is offering $19 and with other buyers will not pay more. For the present specialties are quoted at $19 to $19.50. The Westinghouse Electric & Mfg. Co. obtained prices for its April scrap which are high compared with present quoted levels, bundled sheets bringing $15.40 f.o.b. its plant, whereas that grade is quoted today in the open market at $14.50 to $15.

St. Louis Drops Further

St. Louis, April 7.—Iron and steel scrap continues its downward course. Recent revisions range from 25 cents to $1.50 per ton. Consumers are taking only what they absolutely must have, and virtually all sales are for prompt shipment.

There has been some trading between dealers to apply on old orders, but new orders are scarce and small. Cast grades are relatively in better demand than other descriptions, with machinery cast holding fairly firm. Heavy melting steel is abundant. Steel specialties have also yielded, and rolling mill grades generally are slow and weak.

Yard stocks have increased and assortments are well filled. Railroads have been shipping heavily, and some distress scrap has appeared.

Railroads continue to dump scrap, recent offerings including the following: Cotton Belt, 2200 tons; Union Pacific, 1200 tons; Chicago and Eastern Illinois, 725 tons; Frisco, 700 tons; Mobile & Ohio, 2000 tons and C. W. L., 300 tons.

Market Is Lagging

Birmingham, April 7.—Iron and steel scrap is lagging, and there is not much new demand though consumers are taking tonnages on contracts. Dealers are buying as much stock as they are shipping out. Quotations have fluctuated little in the past four weeks. There is no scarcity of any grade of scrap. Pipe shops are still using No. 1 cast and stove plate is also finding some market. Demand for heavy melting steel is slow but prices show no change from $14. No trouble is being experienced by dealers in getting all the stock required.

Ingot Record Is Broken

March Production of 159,455 Tons Per Day Highest in History Exceeding the Peak of Last April

PRODUCTION of steel ingots in March totaled 4,145,829 gross tons and on an average daily basis reached the highest point in the history of the country, according to statistics compiled by the American Iron and Steel institute from figures supplied from companies which in 1922 produced 95.35 per cent of actual output. Compared with the 3,780,663 tons of ingots made in February, the March output showed an increase of 365,166 tons, or 9.6 per cent. March, however, had 26 working days as against 25 in February. The gross total production for the country was the second largest in history, being 49,971 tons less than the high point production of 4,195,800 tons last May. Actual production of the reporting companies was 3,953,048 tons as compared with 3,604,862 tons in February, the gain being 348,186 tons.

On an average daily basis the calculated March production of ingots was at the rate of 159,455 tons, and thereby established a new high mark of production for the country. Compared with the previous peak output of 157,776 tons last April, this is a gain of 1679 tons or of 1.06 per cent. The March daily rate represented an increase of 8228 tons or 5.4 per cent over the February daily rate of 151,227 tons.

On the basis of 159,455 tons per day in March and 311 working days in the year, the indicated annual rate of production during the month was 49,590,000 tons. At this figure the increase is 2,560,000 tons over the 47,030,000-ton annual rate indicated in February. Against the previous record rate of 49,060,000 tons of last April, the March indicated annual rate was a gain of 530,000 tons.

Comparisons of steel ingot production by months for 1923 and the first three months of 1924, as compiled by the American Iron and Steel institute are given in the accompanying table.

Tennessee Plant Breaks Production Records

Birmingham, April 8.—Several production records were broken by the Tennessee Coal, Iron & Railroad Co. during March, the more significant being in steel with 110,269 tons and in iron ore with 334,677 tons turned out. Preparations are under way for still greater production of ore and steel. Loading machines are being installed at the mines and four open-hearth furnaces are planned for construction during the next 12 months.

The official statement as given out by George Gordon Crawford, president of the Tennessee Coal, Iron & Railroad Co. was as follows:

The following new production records were established for March in the operations of the Tennessee Coal, Iron & Railroad Co.

Red ore: Muscoda No. 2 mine, 30,865 tons, best previous, 30,779 tons, August, 1923; Muscoda No. 4 mine, 47,456 tons, best previous, 45,702 tons, January, 1924; total Muscoda ore, 144,379 tons, best previous, 137,721 tons, January, 1924; Wenonah No. 10 mine, 29,672 tons, best previous, October, 1923; Ishkooda No. 13 mine, 28,679 tons, best previous, 27,813 tons, March, 1917; total Red Mountain group, 329,247 tons, best previous, 322,415 tons, January, 1924; grand total ore, 334,677 tons, best previous, 326,107 tons, January, 1924.

Coal: Hamilton Slope, 37,716 tons, best previous, 27,161 tons, February, 1924; Blocton No. 10 mine, 18,648 tons, best previous, 16,270 tons, January, 1924.

Bessemer No. 4 furnace, pig iron, 9402 tons, best previous, 9348 tons, January, 1924.

Ensley open hearth, steel, 110,269 tons, best previous, 107,395 tons, March, 1923.

Three Marks Raised

Three new high production records were established in March by the Woodward Iron Co., Woodward, Ala. The Woodward blast furnaces, having broken the pig iron production record for February in March broke all their previous records by 1375 tons. Coke production totaled 71,432 tons, as compared with the best previous record of 71,139 tons. The Redding mine produced 35,224 tons of ore, as against the previous month's record of 32,881 tons.

Furnaces Are Shut Down

Sharon, Pa., April 8.—The first curtailment in the operation of Steel corporation plants took place Monday when six of the 15 open-hearth furnaces and the skelp mill at the Farrell plant of the Carnegie Steel Co. were shut down. No. 3 blast furnace will be blown out the end of the week for relining. The plant has been working 100 per cent capacity for more than a year.

Bethlehem Doing Well

New York, April 8.—Plants of the Bethlehem Steel Co. are operating at 80 to 85 per cent of ingot capacity. During March operations of the company were better than in any month since the falling off in business about the middle of 1923. New orders during March substantially replaced shipments.

The Bethlehem Steel Co. in March broke all records for tonnage shipped from its Saucon plant at South Bethlehem, Pa., and also from its drop forge plant at the same point.

Steel Shipments Heavy

New York, April 8.—Shipments of the United States Steel Corp. in March ran from 49,500 to 49,750 tons daily. The best that the Steel corporation ever did in a single month was 51,000 tons daily, a record established several years ago.

Chicago On Full Time

Chicago, April 8.—General operations of both the Illinois Steel Co. and the Inland Steel Co. continue practically at capacity.

Steel Ingot Production 1923-24

1923	Open-hearth	Bessemer	All other	Monthly production	Calculated monthly production all companies	No. of working days	Approximate daily production all companies	Change, per cent daily production
				95.35 per cent of industry reporting				
Jan.	2,906,892	728,270	9,467	3,644,629	3,822,369	27	141,569	+ 7.1
Feb.	2,613,564	669,903	10,797	3,294,264	3,454,918	24	143,955	+ 1.7
March	3,046,309	799,525	12,841	3,858,675	4,046,854	27	149,883	+ 4.1
April	2,974,579	772,485	13,933	3,760,997	3,994,412	25	157,776	+ 5.2
May	3,136,558	847,418	16,719	4,000,695	4,195,800	27	155,400	— 1.5
June	2,821,239	737,845	15,483	3,574,567	3,748,890	26	144,188	— 7.1
Total 6 mos.	17,499,141	4,555,446	79,240	22,133,827	23,213,234	156	148,803	
July	2,658,449	680,884	11,496	3,350,829	3,514,241	25	140,570	— 2.5
Aug.	2,796,370	701,059	9,326	3,506,755	3,677,771	27	136,214	— 3.1
Sept.	2,551,490	613,709	8,602	3,173,801	3,328,580	25	133,143	— 2.2
Oct.	2,724,371	649,452	9,163	3,382,986	3,547,966	27	131,406	— 0.9
Nov.	2,343,378	616,335	9,309	2,969,012	3,113,804	26	119,762	— 8.8
Dec.	2,130,613	570,004	10,912	2,711,529	2,843,764	25	113,751	— 5.0
Total 12 mos.	32,703,802	8,386,889	138,048	41,228,739	43,239,369	311	139,033	
1924				**95.35 per cent of industry reporting**				
Jan.	2,752,932	667,032	12,577	3,432,541	3,599,938	27	133,331	+17.2
Feb.	2,894,872	695,905	14,085	3,604,862	3,780,663	25	151,227	+13.4
March	3,230,986	706,801	15,261	3,953,048	4,145,829	26	159,455	+ 5.4

Continental Competition Fading

British Market Situation Shows Improvement, Though France's Iron and Steel Output Is Largest Since the War—New Corporation in South Wales Controls Two-thirds of Tin Plate Exports

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, April 8.—Competition from iron and steel producers on the Continent is subsiding, and the situation in the British pig iron market has improved. British stocks are being cleared away, except at Barrow-in-Furness, where two blast furnaces stacks have been extinguished owing to the suspension of operations at steelworks.

Exports of pig iron from Middlesbrough in March totaled 32,400 tons, which includes 3800 tons shipped to the United States. In February 3900 tons of pig iron was shipped to the United States.

The South Wales Tin Plate Corp. has been organized with a capital of £700,000. It controls two-thirds of the tin plate export trade.

IRON TRADE REVIEW's correspondent at Paris reports that production in France in February was the highest since the close of the war. The output of pig iron was 590,000 metric tons, compared with 585,978 in January and a monthly average of 441,630 tons in 1923. The monthly average in 1913 was 433,900 tons. Steel production in February totaled 555,000 metric tons, compared with 541,022 in January and a monthly average of 414,740 tons in 1923. The monthly average in 1913 was 390,580 tons.

A cablegram from India reports the government favors a tariff on iron and steel products although less than asked for by the Tata Iron & Steel Co.

Changes in the British market this week bring the following products to the levels as quoted: Billets and sheet bars for domestic use, £ 7 15s ($33.52); steel bars for domestic use, £8 17s 6d ($38.38); for export, £8 12s 6d ($37.30); galvanized sheets for domestic use, £17 15s ($76.77); West Coast hematite £4 19s ($21.41); Middlesbrough No. 3 foundry iron £4 12s ($19.90); Derbyshire No. 3 foundry iron £4 15s ($20.54); Northamptonshire No. 3 foundry iron £4 12s 6d ($20); Staffordshire No. 3 foundry iron, £4 15s ($20.54); furnace coke for domestic use or export £1 5s ($5.41).

Sterling exchange is figured on a basis of $4.325.

German Domestic Steel Prices Above Export

European Special Service

BERLIN, March 27.—The tone of the German iron and steel market is improving owing to slackening of French and Belgian competition. Demand in the home market is broadening but export business is not increasing much because domestic prices are higher than export quotations and afford greater profit to producers. Recently a German mill is reported to have declined to book some export orders, declaring that it could obtain £1 more per ton in the domestic market. Export trade is further hampered by a longshoremen's strike at Hamburg and Bremen.

Some tonnages of ship plates and sheets have been sold for export recently. Sales of bands have also been made at £9 10s to £10 a ton (1.86c to 1.95c per pound) f.o.b. A representative of Krupps is reported to be in Chili endeavoring to sell German steel. German exports of sheets and wire for January were 21,379 metric tons compared with a monthly average of 25,769 tons in 1923. Exports of bars and structural shapes for January advanced to 18,956 tons, the monthly average for 1923 being 16,453 tons. Pipe exports declined from an average of 8207 tons a month to 4974 in January 1924. As a result of increasing production, scrap prices have advanced sharply.

The Vulcan Works at Duisburg has blown in its third furnace; the Burbach-Dudelinger Works now has 20 furnaces operating of a total of 23. Unemployment is decreasing and Ruhr plants are working at over 60 per cent of the 1922 rate. The Klockner company reports its pig iron output during the fiscal year 1922-23 was 74 per cent of prewar production, while the steel output reached prewar figures. During the same period, the Upper Silesian Laurhutte produced 223,239 metric tons of rolled products against 209,054 tons during the preceding year.

Domestic prices are going up. Upper Silesian bars have been sold at 145 rentenmarks per ton (1.49c per pound). There is a good demand for wire rods at advancing prices since French competition has practically vanished. The rise of the franc has caused an advance of German domestic prices. Pig iron quotations in Southern Germany have advanced by 5 rentenmarks ($1.10) a ton following a long period of depression. Negotiations are taking place with the Spanish authorities in order to resume the sales of Spanish ores to Germany in return for which it is proposed that the surplus import duty on German goods going into Spain be taken off.

Exchange Values Upset Balance of Trade

European Staff Special

Office of IRON TRADE REVIEW,
23 Rue de la Bienfaisance

PARIS, March 28.—The franc has regained a cent in value in the past 10 days following a period of depreciation which enabled continental iron and steel producers to book heavy export orders at low prices compared with American and British quotations. As a result conditions in Western Europe are

Sterling—$4.30

completely unbalanced and new business is scarce and spotty. Some unusual consequences have developed. It has been reported that the same ship which brings continental pig iron to England returns with British pig iron of an equivalent grade sold to continental users. This is illustrated by the fact that Belgian foundry pig iron 2.50 per cent silicon was offered for export recently at 500 Belgian francs, then corresponding to £4 12s per ton at works. At this price no business could be done since Middlesbrough foundry iron can be bought in Antwerp at a slightly lower quotation. On the other hand, English hematite which is

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange April 7

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	33.52	7 15 0
Sheet bars	33.52	7 15 0
Wire rods	47.58	11 0 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	38.38	8 17 6
Steel bars, England, ½ to 3-inch, for export	37.30	8 12 6
Plates, ship, bridge and tank, England	41.09	9 10 0
Plates, ship, bridge and tank, England, for export	38.93	9 0 0
Plates, ship, bridge and tank, Scotland	41.09	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.93	9 0 0
Beams, England	41.09	9 10 0
Beams, England, for export	36.22	8 7 6
Beams, Scotland	41.09	9 10 0
Beams, Scotland, for export	36.22	8 7 6
Sheets, black, 24 gage	56.23	13 0 0
Sheets, black, 24 gage, for export	58.39	13 10 0
Sheets, galvanized, 24 gage	76.77	17 15 0
Rails, 60 lbs. and over	38.93	9 0 0
Rails, 60 lbs. and over, for export	36.76	8 10 0
Tin plate, base box 108 lbs.	5.30	1 4 6
Steel hoops	51.90	12 0 0
Steel hoops, for export	47.58	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.19	4 18 0
Hematite, West Coast, Mixed Numbers	21.41	4 19 0
Basic, Middlesbrough	20.54	4 15 0
No. 3 Foundry, Middlesbrough	19.90	4 12 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.54	4 15 0
No. 3 Foundry, Northamptonshire	20.00	4 12 6
No. 3 Foundry, Staffordshire	20.54	4 15 0
No. 3 Foundry, Scotch	21.63	5 0 0
Ferromanganese, 76 to 80 per cent	73.53	17 0 0
COKE		
Yorkshire furnace	5.41	1 5 0
Foundry	7.14	1 13 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

PIG IRON

	$	Pounds per metric ton (2205 lbs.)
Hematite	24.00*	5 11 0
Foundry, No. 3	20.11	4 13 0
Stahleisen, Siegen	22.27	5 3 0
Foundry, No. 1	20.54	4 15 0
Luxemburg Foundry, No. 3	18.17	4 4 0
COKE		
Lower Silesian furnace	7.35	1 14 0
Lower Silesian foundry	7.79	1 16 0
SEMIFINISHED STEEL		
Billets	28.55	6 12 0
Sheet bars	29.63	6 17 0
Wire Rods	37.63	8 14 0
FINISHED STEEL		
Standard rails	31.36	7 5 0
Merchant bars	31.14	7 4 0
Structural shapes	30.28	7 0 0
Ship plates	36.33	8 8 0
Medium plates, 3 to 5 millimeters	39.79	9 4 0
Sheets, 1 to 3 millimeters	43.25	10 0 0
Tin plate, per box of 575 kilograms		Nominal
Plain wire	43.25	10 0 0
Bands and strips	39.79	9 4 0

All prices are f.o.b. furnace or works.

*German prices now are quoted in pounds, sterling.

French Market

Prices Last Reported

PIG IRON

	$	Francs per metric ton (2205 lbs.)
Hematite, Lorraine	30.04	520
Basic Bessemer, Lorraine	23.69	410
Foundry, Longwy, No. 3, sand-cast	23.11	400
Foundry, Longwy, No. 3 chill-cast	23.69	410
Ferromanganese, 76 to 80 per cent	107.46	1,860
COKE		
French furnace	8.20	142
German furnace, f.o.b. frontier	8.29	143.5
French foundry	9.07	157
SEMIFINISHED STEEL		
Blooms	36.98	640
Billets	38.13	660
Sheets bars	39.86	690
FINISHED STEEL		
Standard rails	35.82	620
Merchant bars	42.75	740
Angles	41.02	710
Normal beams and profiles	41.02	710
Plates, ship and tank, 10 millimeters and thicker	45.64	790
Plates, bridge and tank, 5 to 10 millimeters	47.95	830
Sheets, black, 3 millimeters	50.26	870
Sheets, blue annealed, 2 millimeters	53.44	925
Shafting, cold-drawn, 40 to 60 millimeters	72.22	1,250
Bars, 2 per cent nickel steel	106.88	1,850

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

PIG IRON

	$	Francs per metric ton (2205 lbs.)
Basic bessemer, Belgian	22.82	470
Basic open-hearth, Belgian	23.79	490
Gray forge, Belgian	23.30	480
Foundry, No. 3, Belgian	23.55	485
Foundry, No. 3, Luxemburg	23.55	485
Foundry, No. 3, Lorraine	23.55	485
SEMIFINISHED STEEL		
Blooms	32.29	665
Billets	34.71	715
Sheet bars	36.17	745
Wire rods	44.91	925
FINISHED STEEL		
Standard rails	33.74	695
Merchant bars	38.84	800
Normal beams and profiles	36.90	760
Plates, 5 millimeters and thicker	40.54	835
Sheets, black, 3 millimeters	42.48	875
Sheets, galvanized, 1 millimeter	103.17	2,125
Plain wire	77.97	1,400
Galvanized wire	82.54	1,700
Wire nails	70.40	1,450

All prices are f.o.b. furnace or works.

quoted around £5 12s 6d c.i.f. channel ports competes at present on the French market, as with the pound at 85 francs this corresponds to about 480 francs, with the French product quoted at about 520 francs at the furnace.

If the franc becomes stabilized at 90 or 95 francs to the pound, French and Belgian export quotations will probably have to be adjusted downward in certain cases, if continental producers want to compete successfully with British makers. On the other hand, it is extremely difficult to compare conditions as exchange rates have varied daily from 3 to 10 francs to the pound.

French iron and steel exports during January and February 1924 were 452,875 metric tons compared with 350,520 tons in the corresponding period of last year. Conditions in the French market brought about by the recent export boom are striking. Furnace operators and steelmakers have booked sufficient orders to keep them going well into May. In the hope the rising tendency of domestic prices would continue, they have withdrawn to some extent and rerollers and fishing mills have found it difficult to obtain pig iron and steel ingots. Producers ascribe their unwillingness to take new business to the fact that production cannot be increased as the supply of coke does not justify blowing in more stacks. Because of the fear that the agreements between the interallied control commission and the Ruhr industrials may not be renewed it is reported that stocks of coke and raw material are being built up. These conditions apply less in the Belgian market. France can not increase exports without disturbing her own market.

The outlook for British export trade is somewhat brighter, although prices generally afford small profit, especially in pig iron, where prices have gradually been shaded since the beginning of the month. Anxiety is felt regarding the result of negotiations between miners and employers. In the meantime, boiler and ship plate makers have been enjoying a good run of business. Boiler plates have been sold to Germany at £13 6s per ton (2.38c per pound) f.o.b. Rails are being exported at about £8 10s ($36.65) per ton. Inquiries for rails and sheets have been received from India.

John B. Wright and Stuart A. Young of Young & Bigelow, Newark, N. J., have been named as temporary receivers for the American Concrete Steel Co., Inc., 31 Clinton street, that city. Stated assets include $121,000 in partially completed structures, with promissory notes totaling $295,000 coming due on or before May 25. Liabilities amount to $200,000 more than assets

Engineers Discuss Fuel Saving Problems

Pittsburgh, April 8.—"By the adoption of modern methods in the use of fuel equipment a saving of $200,000,000 a year could be effected in the steel industry alone," said W. P. Chandler, fuel and combustion engineer of the Duquesne plant of the Carnegie Steel Co., in an address to several hundred delegates of the fuel savings conference of the combustion engineering section of the Association of Iron and Steel Electrical Engineers in session at the William Penn hotel, April 2. Mr. Chandler analyzed the results of the present systems in use in many of the largest plants in the country and gave figures in support of his belief that the installation of newly devised appliances and their scientific operation hold out vast possibilities in the development of the industry. His discussion was of a purely technical nature.

In welcoming the visitors to Pittsburgh, R. S. Shoemaker, president of the association, reviewed the growth and achievements of the organization, which was instituted 17 years ago by 28 engineers and now has a membership of more than 1500, including representatives of the profession in foreign countries. He told also how the leaders had formed the National Safety council to cut down accidents. General Chairman G. R. McDermott of Chicago announced the organization's decision to hold an exposition of power apparatus for iron and steel mills in Duquesne Garden, Sept. 15 to 20.

At Wednesday's session B. G. Brolinson of Wellsville, N. Y., and J. M. Spitzglass of Chicago, talked on "Measurement of Input and Output of Boiler Rooms." In urging the systematic adoption of air preheaters on steel furnaces by all large companies, Mr. Brolinson predicted that a saving of $50,000,000 annually could be accomplished. His subject was "Air Heaters."

Thursday afternoon the delegates made an inspection trip to the Eliza blast furnaces of the Jones & Laughlin Steel Corp. A dinner closed the convention Thursday night.

Manufacturing Plants To Train Foremen

The Muncie Malleable Foundry Co. has made arrangements with Purdue university, Lafayette, Ind., for its course in "Foreman Training." This is the third Muncie manufacturing company to arrange for this work, courses now being under way at the Ball Bros. Glass Co. and the Warner Gear Co. The object of the course is to train foremen in the best methods of teaching new men their trade as well as to increase production. The work is under the direction of Glen Brown, city vocational director and the meetings and lectures are conducted by G. E. Buxton, associate professor of industrial education at Purdue university.

Stock Taken By 20,000 Bethlehem Workers

More than 20,000 employes of the Bethlehem Steel Corp. applied for a total of over 51,000 shares of its 7 per cent cumulative preferred stock in response to the initial offering under its employes saving and stock ownership plan, which closed March 15. The employes applying represented approximately one-third of the entire number, and the applications averaged 2.7 shares each. The number of shares applied for is about 10 per cent of the total shares of 7 per cent preferred stock outstanding.

Although the applications exceed the estimates made when the offering was announced, the trustees under the plan have decided to accept all applications in full. The number of all stockholders of the corporation in January was 49,497. Eugene G. Grace, president, states the corporation contemplates an annual offering of a limited amount of stock, which may be paid for by the employes through small deductions from earnings.

Defer Tariff Increase

Washington, April 8.—Operation of the increased duties on plain iron and steel sheets and plates, iron and steel tubes or pipe, except riveted, cast or close jointed below 3 inches internal dimension, and boiler tubes and iron and steel hoops, shipped into Australia, previously deferred to March 31, again has been postponed until Sept. 30, according to advises received by the United States department of commerce. The duty now is 10 per cent *ad valorem* on this material, with a 25 per cent *ad valorem* duty on cutlery. The proposed duty will be 115 shillings a ton on sheets and plates; 40 per cent *ad valorem* on tubes and pipe; 95 shillings a ton on iron and steel hoops; and 35 per cent *ad valorem* on cutlery.

Yale & Towne Mfg. Co., Stamford, Conn., reports for the calendar year 1923 net profits after reserve for taxes of $2,890,623. This compares with net of $2,406,664 in 1922.

Conference Board Shows Cost of Bonus

New York, April 8.—The American people may be forced to forego 80 per cent of additional tax relief under the Mellon plan if the bonus bill as passed by the house becomes a law, according to an analysis of the taxation situation and of the bonus bill by the national industrial conference board. In addition, the board warns, some of the so-called "nuisance taxes" may have to be continued, and it is highly probable that some which congressmen have agreed to eliminate, during their present discussions, will be restored, the board asserts.

Injury to the nation's finances is seen as a result of the bonus measure's enactment, the board asserting:

"Even though the bonus proposed were justified by social principle and constituted an adjustment equitable to the soldiers and civilian population, the payment of the compensation as contemplated would throw a burden upon the financial powers of the government which would react injuriously upon the fiscal situation and upon the entire population, including the veterans themselves, and might tend to hamper the government in fulfilling its obligation to care for the disabled veterans of the war or a demand upon it to provide pensions in the future."

The present huge public payroll of nearly $4,000,000,000 a year, which keeps one person out of every dozen over 16 gainfully employed supported by the people will be increased under the financial burden imposed by payment of the bonus, the board's analysis shows. The bonus cost, if distributed over 20 years, will amount each year on the average to about $250,000,000 according to treasury estimates, a sum equal to 80 per cent of the taxation relief sought in the Mellon plan.

Puddling Plant Burned

Fire severely damaged the plant of the Sligo Iron & Steel Co., Connellsville, Pa., April 3. This is the puddled iron plant of the Lockhart Iron & Steel Co., McKees Rocks, Pa. It has 24 single puddling furnaces and considerable rolling mill equipment. The plant had been working full time and will resume as soon as repairs can be made.

The report of Chicago Pneumatic Tool Co., Chicago, for year ended Dec. 31, 1923, shows net income of $812,036, after all charges and federal taxes. This compares with $505,818 in 1922.

Foreign Steel Buying Uncertain

American Consumers at Disadvantage in Purchasing European Material, Unless Inspection Is Made Before Shipment—Contract Clauses Favor Sellers—Low Prices Affecting Markets in United States

BY E. C. KREUTZBERG

THE purchase of foreign steel at present is a matter which for the first time in many years is engaging the attention of a large number of eastern buyers. Experience so far shows that much more care must be exercised in buying steel abroad than in buying in the domestic market.

An eastern buyer recently received a shipment of small angles from Belgium. The angles had been ordered to inch sizes. On their arrival they were found to have been rolled to millimeter sizes, and much of the tonnage was not sufficiently close to inch sizes to be marketable in this country. There also was some waviness in the rolling of the material, and the fillet in the angles was too thick. For these reasons the buyer rejected 65 per cent of the shipment.

Another eastern buyer received a tonnage of shapes from Luxemburg. After looking it over, he said it was as good a lot of steel as he ever saw, and that he intended to order some more of it.

Discrimination Is Necessary

One buyer says: "European mills can roll just as good steel as ever was produced in this country. On the other hand, Europe also can roll worse steel than ever was produced in this country." In the first place, it is necessary to buy from a mill that is capable of producing the quality desired.

Another eastern buyer commented as follows with regard to an offer of European tank plates that had been made to him:

"I have seen European plates. Some of them were satisfactory in every respect, while others reminded me of the surface of the sea down at Asbury Park when the waves rolled in gently. I prefer to buy from domestic mills and be sure of what I am getting."

European makers still feel the unsettling effect of the general European political situation. They are not as confident as American producers of their ability to make deliveries, and they do not know what may happen to revolutionize conditions. Hence, in many instances American buyers have had to sign contracts embodying a provision which exempts the producers from liability due practically to any cause. This provision is unusual from an American standpoint. A translation of it follows:

The author is associate editor in New York of IRON TRADE REVIEW.

"The dates of delivery are to be indicated for each order; given as such they are merely to be considered as information, without engagement, guarantee, or responsibility for the company. In consequence, unless stated to the contrary and formally accepted by the company, the company never can be called upon to pay an indemnity or a penalty for late delivery of the materials. The cases *de force majeure* are reserved to the advantage of the company, and dispense it in all cases from respecting the dates of delivery stated. To be considered as cases *de force majeure:* War, strikes, lockouts, partially or completely broken out among the works having to supply the goods; or with the suppliers, breakdowns of machines, accidents, epidemics, interruptions in the transports, lack of raw materials or labor, and, generally, all causes susceptible to prevent the normal working of the business and the forwarding.

"These cases cannot entail the resiliation of the contracts by the buyer nor the right for this company to provide the material elsewhere for account of the company nor the obligation for the company to supply in lieu and place products from other works.

"If after the conclusion of the contract the buyer does not carry out each and every one of his obligations, the company has the right to bring an end to the contract and to consider same as finished without being compelled to summon or appeal to the courts for the resiliation of the contract. This is reserved without prejudice to the damage that may be claimed.

"The excess quantities specified by the buyer on the contract will be cancelled or invoiced at the market price of the day, at the option of the company. The company reserves the right even after partial execution of the contract to claim from the buyer a guarantee to be approved by the company to the effect that all engagements will be executed."

It will be seen that the buyer of foreign steel must know with whom he is dealing. The latitude which the contracts afford the producer makes it essential for the buyer to deal with producers or agents who are known to be responsible. It has been found in the majority of cases even that is not sufficient. Those buyers who have had the most satisfactory experience with foreign steel have had representatives on the spot to inspect the steel and assure themselves prior to shipment that it conformed to requirements. Such inspection is necessary not only to check the dimensions and quality of the rolling of the material, but also because the European mills roll to physical properties rather than analysis, as do the Americans, so that it is necessary to be sure the steel will meet American requirements. Unless the steel is inspected prior to shipment, it is largely a matter of luck when the buyer receives what he expected when he placed the order.

Several eastern concerns who have bought considerable steel abroad are following the policy of refusing to sell a pound of it until they actually have received it and know what it is. They are following this policy in addition to taking other precautions, such as dealing with principals of known responsibility, and having the steel inspected prior to shipment.

Low Prices Are Named

All of these matters have some bearing on the prices paid for European steel. On the average, the prices paid for European bars and shapes appear to range from 1.90 to 2.00 cents per pound, laid down on dock at tidewater, with duty and all charges paid. Lower prices have been done, and it is understood that some European bar tonnage actually has been sold at 1.70 cents. On the other hand, 2.15 cents or more has been paid. Top prices have been paid by buyers who are most familiar with European steel.

"You can buy European steel at almost any price," said one of these interests. "However, we do not find it of much value if it is not satisfactory in every way. We deal only with the mills that we know to be reliable, and even then we have our own representative inspect every ton before it is shipped. In this way we are paying considerably more for our steel than many of the offers now current, but we would rather pay the higher prices and be sure of getting steel that is satisfactory."

Just how much foreign steel has been sold in the East is not definitely known, because many transactions have been

kept under cover. There has been active solicitation of orders for foreign steel all through the East and it is certain that many thousands of tons of Belgian, French and Luxemburg steel have been sold in the New England, New York and Philadelphia territories. The largest proportion of sales are of bars, angles and beams. There are some tank plates and blooms and billets being sold.

While the business in foreign steel is very small, compared with requirements in these districts, the prices have had a disturbing effect on the domestic market. Purchases of foreign steel have been made by all classes of buyers, including jobbers, fabricating shops and consumers, so that the effect has been widespread. As the prices range from $8 to $15 a ton under those on domestic material, the buyers are inclined to be dissatisfied with quotations from American makers. Because of this competition, American mills have taken business along the eastern seaboard at prices which seem out of line with prices of domestic steel at Pittsburgh, Cleveland, Chicago and other inland points. The prices done in the East have some effect on the general price structure of the country, so that the business in foreign steel in the East affects the markets in other districts.

This disturbing influence is not restricted to finished rolled steel. It can have considerable weakening influence on prices of finished steel products. For instance, an eastern bolt and rivet manufacturer could buy foreign bars that would enable him to command business on a price basis. It is said that weakness in prices on certain steel articles has been due to some extent to the ability of eastern plants to buy their raw material abroad.

The duty on this foreign steel depends on its value abroad. Bars and shapes are paying $6 a ton, based on a tariff of $0.003 per pound when they have a value of not less than $0.01 and not more than $0.015 per pound abroad. This duty does not seem to have proved much of an obstacle in the East.

Americans who have been abroad recently say European steelmasters do not regard the eastern portion of the United States as a part of their regular market. They do consider the Pacific coast territory as such and will fight for business there.

Iron Ore Booklets Give Analyses for 1924

Iron ore booklets for the season of 1924 have been issued by M. A. Hanna Co., Pickands, Mather & Co., Cleveland-Cliffs Iron Co., Clement K. Quinn & Co., Marquette Ore Co. and others. The booklets give the analyses of the various grades of ore shipped by the respective companies, and these show a very wide assortment of ores available to consumers.

The booklet issued by Pickands, Mather & Co. lists six grades of old range bessemer ores and six grades of Mesabi range bessemer ores; 13 grades of old range nonbessemer ores and 12 grades of Mesabi range nonbessemer; six grades of Cuyuna range ores, and one silicious grade. The Cleveland-Cliffs company lists four grades of old range bessemer and one grade of Mesabi range bessemer ores; 15 grades of old range nonbessemer and three grades of Mesabi range nonbessemer ores; three grades of open-hearth lump ores; two grades of silicious and one of manganiferous ore. Quinn & Co. list five grades of manganiferous ores; four Mesabi range bessemer; five old range, four Mesabi range and one Cuyuna range nonbessemer ores, and two grades of silicious. Oglebay, Norton & Co. list seven grades of bessemer ore from the Gogebic range, one grade from the Mesabi and one from the Vermillion; four grades of nonbessemer ores from the Gogebic range and three from the Mesabi; three grades of manganiferous ores and two silicious.

The M. A. Hanna Co.'s booklet which also lists many grades of ores from the principal ranges contains a valuable group of statistics pertaining to production, shipments, lake and railroad freight rates and ore prices in general for the Lake Superior district. A new feature is a map showing the location of the company's iron ore mines; its furnaces, coke plants, coal docks, coal mines, transportation routes, operating managers' offices, purchasing department offices and sales offices. All booklets this year are illustrated with reproductions of the companies' principal mines.

1923 Rail Production Shows Gain Over 1922

Steel rails produced in 1923 totaled 2,904,516 gross tons, according to statistics compiled by the American Iron and Steel institute. This was an increase of 732,740 tons, or 33.74 per cent, over the 2,171,776-ton output of 1922. These figures were reported briefly in the April 3 issue of IRON TRADE REVIEW. In the accompanying table is shown the production of rails by process from 1909 to 1923, inclusive.

On a percentage basis, open-hearth rails represented 94.29 per cent, bessemer 0.89 per cent and all other 4.82 per cent. The corresponding figures for 1922 were 93.61, 1.03 and 5.36 per cents respectively. Thus the open-hearth process made a slight gain and bessemer a slight loss. This is further shown by the fact that while the open-hearth rails gained 705,779 tons or 34.72 per cent, bessemer rails gained only 3560 tons or 15.95 per cent. It is interesting to note, however, that 1923 was the first year to show gain in bessemer production since 1917.

In 1923, 25 steel mills were engaged in rolling or rerolling rails. Of this number 18 used the open-hearth method, three the bessemer and one the electric. Nine mills produced renewed or rerolled old rails. According to weight per yard, 272,794 tons were under 50 pounds, 300,907 tons were between 50 and 85 pounds, 864,965 tons were between 85 and 100 pounds and 1,465,850 tons were over 100 pounds. Alloy treated rails in 1923 totaled 2142 tons as compared with 3163 tons in 1922, and was the lowest since figures first were compiled in 1909. Of the 1923 total 346 tons was titanium, 1720 tons manganese and 76 tons copper treated. With the exception of 118 tons of manganese treated rails made by the electric furnace method, the production of alloy treated rails was made by the open-hearth furnace process.

Production of Rails by Processes

Year	Open-hearth	Bessmer	Rerolled*	Electric	Iron	Total
1909	1,256,674	1,767,171	.....	†	.....	3,023,845
1910	1,751,359	1,884,442	.....	†	230	3,636,031
1911	1,676,923	1,053,420	91,751	462	234	2,822,790
1912	2,105,144	1,099,926	119,390	3,455	.....	3,327,915
1913	2,527,710	817,591	155,043	2,436	.....	3,502,780
1914	1,525,851	323,897	95,169	178	.....	1,945,095
1915	1,775,168	326,952	102,083	.....	.....	2,204,203
1916	2,269,600	440,092	144,826	.....	.....	2,854,518
1917	2,292,197	533,329	118,639	.....	.....	2,944,161
1918	1,945,443	494,193	101,256	.....	.....	2,540,892
1919	1,893,250	214,121	96,422	50	.....	2,203,843
1920	2,334,222	142,899	126,698	297	.....	2,604,116
1921	2,027,215	55,559	96,039	5	.....	2,178,818
1922	2,033,000	22,317	116,459	.....	.....	2,171,776
1923	2,738,779	25,877	139,742	118	.....	2,904,516

*Rerolled from old steel rails. Included with bessemer and open-hearth steel rails in 1909 and 1910. †Small tonnages rolled in 1909 and 1910, but included with bessemer and open-hearth rails for these years.

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Ore Price Reduction Significant

FEW developments in recent years have so clearly indicated and emphasized the trend of affairs in the Lake Superior iron ore industry as has the reduction of 80 cents in the price of ore announced last week by one of the important producers. The tendency has been toward the elimination of small operators having high production costs, and the centering of the business with a few companies in position to mine ore for less money. This has been the inevitable result of changed economic circumstances, just as in other industries there have been absorptions and mergers to affect lower costs and strengthen competitive positions. The reduction in ore prices is chiefly significant as revealing the changed order of organization in that industry. The question arises whether these conditions are better for the iron and steel industry as a whole.

The new prices will not permit small operators to conduct their business at a profit. That is apparent from what it costs to produce ore. The difficulty for them is no longer remote; it is immediately before them now and it promises to compel them to close their mines. The majority of the mines are underground, costing much more to work than the open pits. The leading producers know that some of the lesser interests will be forced out of business permanently because taxes and other charges have become prohibitive for them.

One effect will be noted in fewer offerings of ore from small producers. Fewer stockpiles will be seen in the spring of the year; there will be fewer independent operators. And some of those producers whose fortunes are between the two extremes will find their course made much more difficult. This is why so much dissatisfaction is being expressed in the ore industry against a reduction of 80 cents.

Whether it will be of benefit to the iron and steel producers remains to be seen. The industry, like that of coal, has been overdeveloped but, unlike the coal industry, the small mines have not existed on famine prices due to strikes. Good prices have been essential to their operation; but it does not follow that blast furnace operators will receive lower prices in the future as a consequence of their elimination. That is not in accordance with the fundamental law of supply.

The effect of the reduction also will be of considerable importance to consumers immediately, being equivalent to a saving of $1.50 in the cost of making a ton of pig iron. Possibly some of them will take advantage of the situation and buy heavily and as much as they can stock for the future. By far the largest share of the ore output is consumed in the making of steel, and some important steel producers believed a radical cut in ore would be more of a disadvantage than otherwise, tending to unsettle business, generally. These are some of the complexities presented by the establishment of new ore prices, the lowest since 1915.

"Fishing" Commission Rebuked

IF THERE was any doubt that the federal trade commission has misinterpreted the spirit and purpose of the act by which it was created, and has abused its powers, the doubt has been swept aside by recent court decisions. In important cases where issues of law, as well as business reputations, were at stake the courts have held the commission was wrong. These have been so frequent that its entire method of procedure is subject to challenge.

The commission was constituted primarily to determine facts of general public interest with respect to basic industries, and to assist and advise business enterprises. It has assumed the characters of detectives, prosecutors and judges, and from time to time has issued orders to manufacturing interests to submit their business affairs for public examination by the commission.

These manufacturers may be wholly innocent of infractions of the law; they may be justified in refusing to disclose their private transactions, but the commission has succeeded in casting suspicion on them. The commission's acts have been declared to be unwarranted when these issues have been brought to test in the courts; but the commission has destroyed public confidence in business enterprise long before the courts have had opportunity to decide.

The commission's procedure in the Claire Furnace cost-reporting case was branded by the appellate court sustaining a decision by the District of Columbia's supreme court, as "a news-gathering expedition in the

hope of securing something of public interest for publication." The United States Supreme Court now has taken a similar position against the commission, comparing its action in the tobacco cases with a "fishing expedition," and declaring it contrary to the first principles of justice."

The issues were identical, involving the simple question as to whether the commission can compel any business enterprise to divulge its own affairs. "The mere facts of carrying on a commerce not confined within state lines and of being organized as a corporation do not make men's affairs public, as those of a railroad company now may be," the Supreme Court says.

The commission with its "fishing" and "news-gathering" expeditions has done more than any other governmental agency to discredit and damage business enterprise. It has created too much scandal and suspicion without justifying itself, and in the end finds itself rebuked by the highest court in the land. Congress now very properly questions the wisdom of voting more money the commission says is necessary to carry on and extend its work.

Automobile Production Curtailed

ESTIMATED production of 356,000 automobiles and trucks in March represented a decline of nearly 3 per cent from the February total of 367,000 cars. In no previous year since the compilation of monthly returns of automobile output is there any record of a falling off in March. The season is one of normal expansion both in sales and in plant operation.

The undoubted curtailment of automobile output now underway is the result of a combination of causes. The industry entered the year with factory schedules turned up to an unprecedented winter pitch. Outputs of cars during January and February exceeded the previous high record for those months in 1923 by 30 per cent. Such amazing production totals were made possible, partly by the extension of credit to dealers by a number of large manufacturers. This enabled dealers to absorb outputs and carry an accumulation of cars in anticipation of large spring demand. The prevailing custom has been for factories to collect cash from dealers upon delivery of cars.

As was to be expected the enormous production of cars outstripped the winter buying by the public. Moreover, spring demand has not opened with the expected vigor. This is largely attributed to weather conditions and to bad roads in the agricultural section. The real test for spring demand has not yet come. Nevertheless many important manufacturers, confronted with the retarded spring, the abundance of new cars in stock and the prevailing caution, are cutting down outputs. This should help keep the situation balanced.

The most important factor in the automobile industry is that of used cars. With 15,000,000 automobiles in operation in this country sales of new cars largely are regulated by the ability of dealers to finance trade-ins or to offer inducements to attract trade-ins. As one manufacturer puts it the "automobile industry is not in the business of selling new cars but rather of buying old ones." The industry is now equipped to produce 5,000,000 or more cars annually. Last year it made approximately 4,000,000. The replacement demand is large, being estimated about 2,500,000 cars annually and total output and sales in 1924 are not expected to exceed 3,600,00. A reduction of 10 per cent or even 20 per cent in motor car output would affect the direct consumption of steel by only about 1 to 2 per cent. In 1923 motors cars absorbed 10 pounds of each 100 pounds of finished steel produced. Smaller outputs of cars will further increase unit costs. A few companies recently have announced price advances. Generally higher automobile prices may prove exceedingly difficult to maintain in view of the keen competition and great producing capacity.

"Free" Service Increases Costs

PRELIMINARY work involved in soliciting structural steel business often entails the expenditure of a considerable amount of capital which, according to custom, the fabricator, is obliged to stand. His engineering department prepares expensive plans, specifications and estimates of each particular job without any charge to the prospective customer. Perhaps in no other industry is service of such an extensive character rendered without the payment of some sort of fee for the work. The rendition of similar service by an architect or an industrial engineer involves a substantial fee and just why those associated with the fabricating industry perform work of an engineering character gratis is a matter of conjecture.

Then again, the condition frequently arises where a contractor having accepted bids on a certain piece of work changes his decision and seeks a lower price. This practice not only lends itself to an increase in the cost of fabrication and a decline in profits but leads to trade disturbance which oftentimes is felt keenly by the entire business. The majority of industries in this country have been confronted on many occasions with problems of this character which, if not righted, result in sales resistance and consequently a corresponding higher rate in selling costs.

When salesmen identified with the fabricating industry are successful in convincing prospective customers of the unjust practice of battering down the price structure without just consideration of fabricating or sales costs, the unbusiness-like practice now confronting the industry will be abandoned. The loose methods employed in selling structural steel in the fabricated state can be corrected most effectively through an educational program, initiated and conducted by the salesmen of fabricated material.

Current Statistics of Industry

Beehive Coke Production Continues Decline

Washington, April 8.—The trend in the rate of coke production turned downward again in the week ended March 29, says the geological survey. The total output is estimated at 296,000 net tons, against 315,000 tons in the preceding week. Comparison with the corresponding week last year shows a decrease of 92,000 tons, or nearly 24 per cent. The decline was practically confined to Pennsylvania and Ohio where there was a decrease of 20,000 tons. The weekly comparison by districts follows:

	—Week ended— Mar. 29, 1924a	Mar. 22, 1924b	Mar. 31, 1923
Pennsylvania & Ohio..	237,000	257,000	308,000
West Virginia	18,000	17,000	23,000
Alabama, Kentucky, Tennesse and Georgia..	22,000	23,000	24,000
Virginia	9,000	9,000	19,000
Colorado & New Mexico	6,000	5,000	8,000
Washington and Utah	4,000	4,000	6,000
United States Total ..	296,000	315,000	388,000
Daily average	49,000	53,000	65,000

(a) Subject to revision. (b) Revised from last report.

The production of soft coal continues to decline steadily. The total output in the week ended March 29 is estimated at 8,837,000 net tons, a decline of 18 per cent from the record of the corresponding one a year ago.

Malleable Output Higher

Washington, April 8.—Production of malleable castings in February, totaling 65,829 tons, was slightly higher than that of January at 64,379 tons, according to reports of the department of commerce from 126 companies. Following is a comparison of production, bookings and rate of operations since May 1923:

	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
May	64,726	71	52,898	91,174
June	65,168	67.7	42,067	96,240
July	57,881	58.9	41,723	98,241
August	68,069	66.0	39,830	103,068
September .	60,930	59.9	38,636	101,750
October ...	62,238	59.9	48,621	103,837
November .	52,727	49.1	37,231	107,350
December ..	49,724	46.5	45,012	106,825
January 1924	64,379	58.6	73,964	109,798
February ...	65,829	61.9	62,562	106,301

The P. B. Yates Machine Co., Beloit, Wis., and Hamilton, Ont., manufacturer of woodworking machinery, has issued $2,000,000 of 6½ per cent first mortgage gold bonds retiring all outstanding preferred stock, amounting to $2,500,000, the surplus having furnished the remaining funds.

Walworth's Orders High

At the annual meeting of the stockholders of the Walworth Mfg. Co., Boston, held recently, Howard Coonley president, stated that so far in 1924 incoming orders have exceeded the capacity of the plants and indications are that gross business for the year will be as large as that of last year, when the aggregate was $18,500,000.

Dividends Are Passed

The British Empire Steel Corp. has announced deferment of dividend payments on its own preferred stock and on the preferred stock of the following subsidiaries: Dominion Steel Corp., Dominion Iron & Steel Co., Ltd.; Nova Scotia Steel & Coal Co. Ltd., and Eastern Car Co. Closing down of plants during the recent labor troubles was given as the cause.

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Wheeling Steel Earnings Show Wide Gain

The business outlook is not all that could be desired but underlying conditions appear sound and 1924 should show satisfactory operating results, in the opinion of Chairman Alexander Glass and President Isaac M. Scott, of the Wheeling Steel Corp. Wheeling W. Va., in their annual statement to stockholders. Net earnings of the company in 1923 were $5,251,430 compared with a net of $457,845 in 1922. The company is in a better position now than ever before to take advantage of any business conditions that might arise, its officals say.

During the year the company produced 647,356 gross tons of pig iron and 869,047 gross tons of steel ingots. This compares with 472,359 gross tons of iron and 680,341 tons of ingots in 1922. Total sales, exclusive of intercompany shipments, were $71,738,502 showing a large gain over $47,926,052 in the preceding year.

The payroll disbursements for the year aggregated $29,354,608 compared with $17,158,865 in 1922. The average number of employes increased from 10,986 to 16,583 last year.

"Fortunately, the tonnage booked during the first half of the year, and in part, carried over, permitted fairly satisfactory plant operations during the third quarter," says the report "but the fourth quarter results were unremunerative, especially for the last two months of that quarter."

Iron Products Net Gains

The annual report of the Iron Products Corp., New York, and its subsidiaries for the year ended Dec. 31, 1923 shows net earnings of $1,149,446 compared with $512,780 in 1922. The company last year produced the largest tonnage in its history and closed the year with all bank loans paid off, according to the report. Production in the first two months of 1924 showed an increase of 27 per cent over the corresponding periodof 1923.

Hudson River Foundry Co., Poughkeepsie, N. Y., has increased its stock from 2500 shares to 3750 shares of which 2500 are $100 par preferred and 1250 no par value common.

The Business Trend

April 10, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

FINANCIAL sentiment has been a little less depressed recently. It has found encouragement in prospects for fairly satisfactory action on the tax measure, in dwindling interest in congressional mudslinging, and in the outlook for Europe.

The foreign situation is dominated by the forthcoming report by the Dawes-McKenna committees. This report will not result in final and complete settlement of all of Europe's ills. It should, however, lay the basis for the most nearly business-like reparations agreement yet proposed.

That will be a distinct forward step. More than likely the coming years will compel far-reaching changes in any arrangement that could be made now. But the important thing is that a start toward the goal of European economic recuperation may be made.

Loan to Germany Likely

The immediate effect of a reparations settlement upon American business should be somewhat stimulating. A large loan to Germany may be floated here, for purchases of food, copper and other raw materials. Europe must buy much material and supply many deficiencies before she will compete seriously with American commerce.

The stock market has advanced slightly over its recent lows. Rail stocks have been especially active This is largely due to the February record of rail earnings which exceeded the annual rate of 6 per cent for the first time in many years.

Meanwhile industrial activity continues to taper off. This is indicated by declining car loadings, by smaller bank clearings, and by weakening commodity prices. In March *Dun's* index of wholesale values fell 2 per cent, the most severe drop since last June.

Outputs Are Cut

Some recession in industrial production is favorable. Outputs rose with great rapidity early in the year. Clearly they have overtaken and in some cases outstripped consumptive needs. Piecemeal buying is tending to keep production in line with current requirements.

In the automobile industry curtailment is apparent. The March record of output was 3 per cent below that of February. This is the first time that a decline in production in March was ever recorded in the industry.

This demand has been retarded by weather, but it is now developing on a good scale at many points. Bad roads have prevented the growth of sales to farmers. Moreover farm improvement has not proceeded with expected vigor this year, although the wheat sections are the worst sufferers.

The Barometer of Business

Weekly Comparison

	Last week	Week before	One mo. ago	One year ago	1913
Business failures ..	393	431	364	355	...
Cash ratio Fed. Res. System %	78.8	80.8	80.5	75	...
Loan rate, 4-6 mo. N. Y. %	4½	4½-4¾	4½-4¾	5-5¼	5½-6
Aver. 25 industrial shares	$108.08	$106.10	$111.68	$113.46	$58.19
Aver. 25 railroad shares	$63.12	$60.89	$61.28	$63.04	$62.90
Aver. 40 bonds	$78.65	$78.28	$77.65	$73.42	$93.00
Car loadings, week ended March 22	908,000	916,953	845,898	917,036	*717,772
Bank debits, 246 cities (000 omitted)	$10,420,311	$9,828,897	.....	$9,840,402	.....

*1920

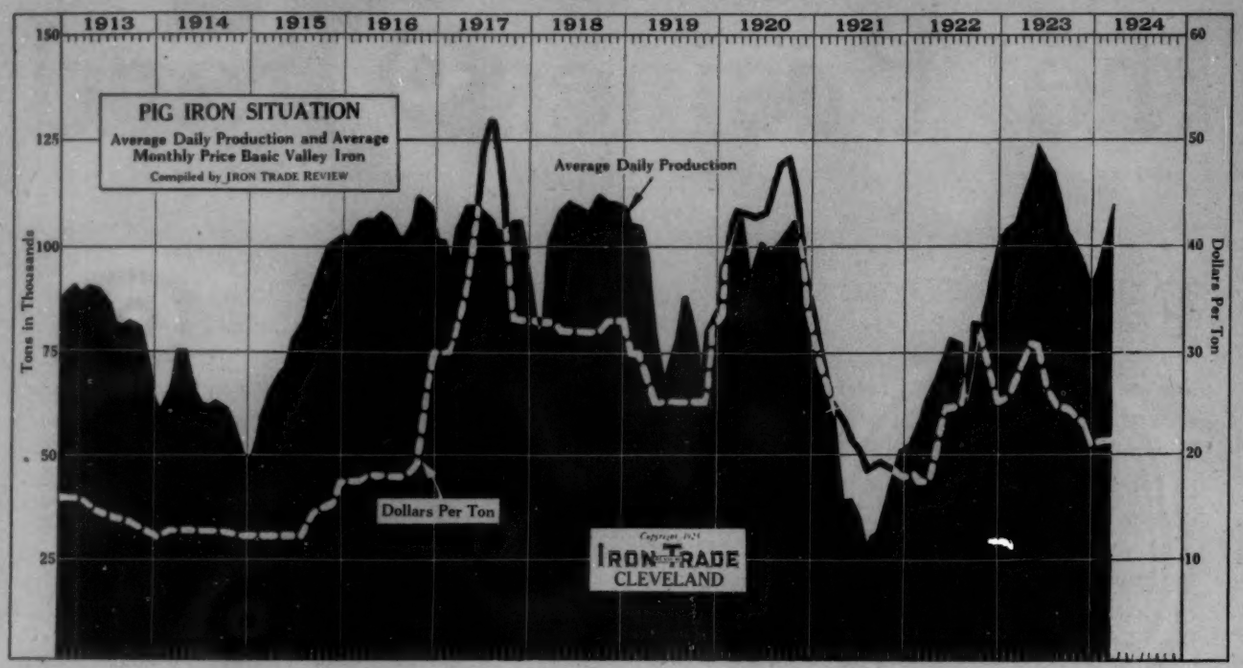
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.33	$4.29	$4.25	$4.66
Francs	19.3c	5.78c	5.46c	3.42c	6.63c
Lira	19.3c	4.43c	4.34c	4.13c	4.96c

Monthly Comparison

	February	Month before	Year ago	Mo. average 1913
Dodge Building awards in 27 states (sq. ft.)	48,036,100	49,867,000	41,751,500	31,250,000
Business failures: Number	1780	2108	1508	1336
Liabilities	$35,942,037	$51,272,508	$40,627,939	$22,732,000
Exports	$367,000,000	$395,170,129	$306,957,000	$233,195,000
Excess of gold imports	$34,606,134	$44,993,832	$6,983,000	†$630,716
Bureau of labor price index	152	151	157	100
Bradstreet's price index	139.4	142.7	149.6	100
Economist's British price index	§170.8	171.8	161.6	100
Nat'l Industrial Con. board living cost index	163.9	164.6	157.5	‡100
New incorporations	§$808,923,700	$661,048,200	$500,819,000	$172,131,000
Railroad net earnings	$60,000,000	$51,000,000	$38,000,000	$59,301,000

†Excess of gold exports. ‡July, 1914. §March.

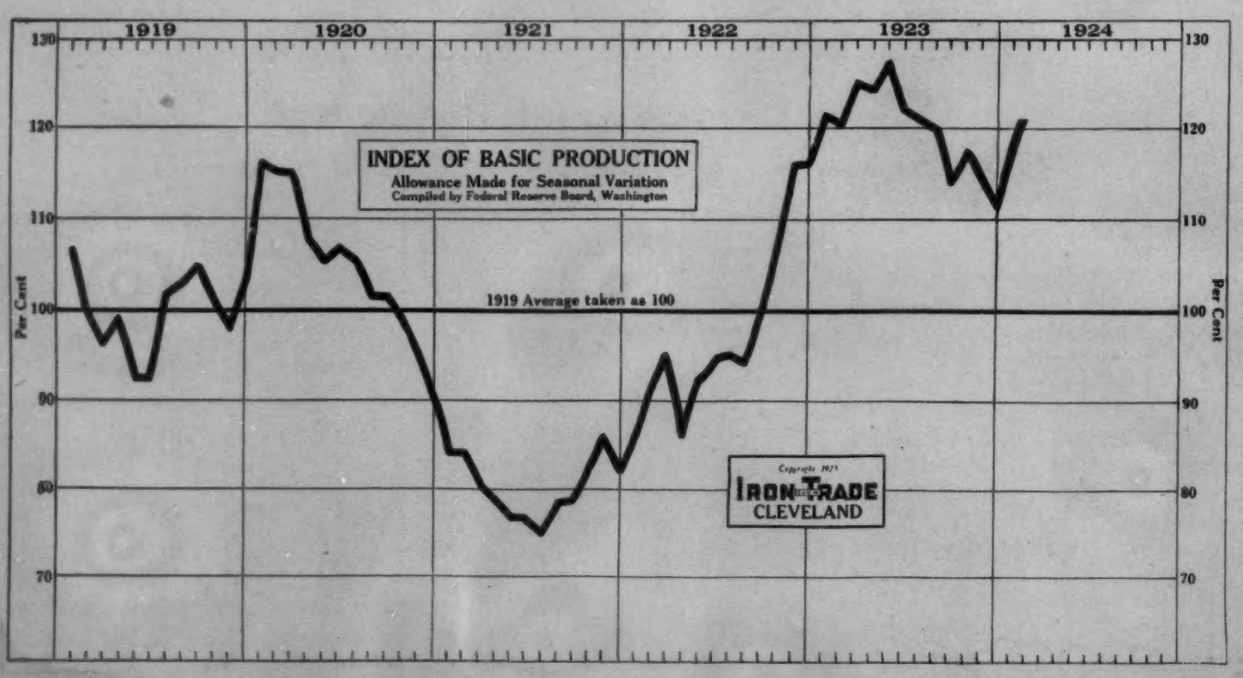


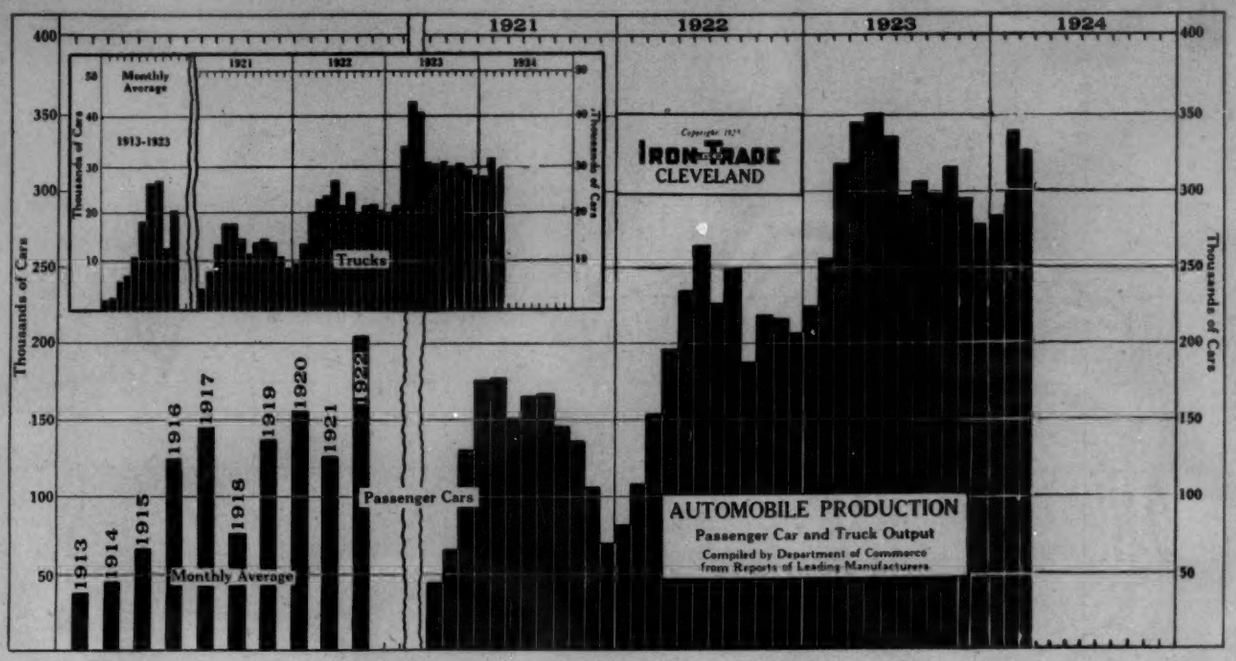
Pig Iron Situation

PIG iron production in March continued the gain begun in January. The daily average rate of output of 112,000 tons was 5 per cent greater than it was in February. The rate was below that of 113,664 tons for March, 1923. The stagnant iron market and some tendency to bank furnaces indicate that the peak of production probably has been reached for the present movement. The March rate was 11 per cent under the top of the 1923 production which was not reached until May, with 124,790 tons daily average.

Basic Production

THE index of production in 22 basic industries, compiled by the federal reserve board, and adjusted for seasonal variation, held virtually steady in February. The swift gain of January was not continued. From all indications, February marked the peak for outputs this year. Large production records have filled up depleted stocks and, in many lines, they have overtaken current consumption needs. The spread of buyers' caution and weakening prices, point to reduced, rather than higher outputs.



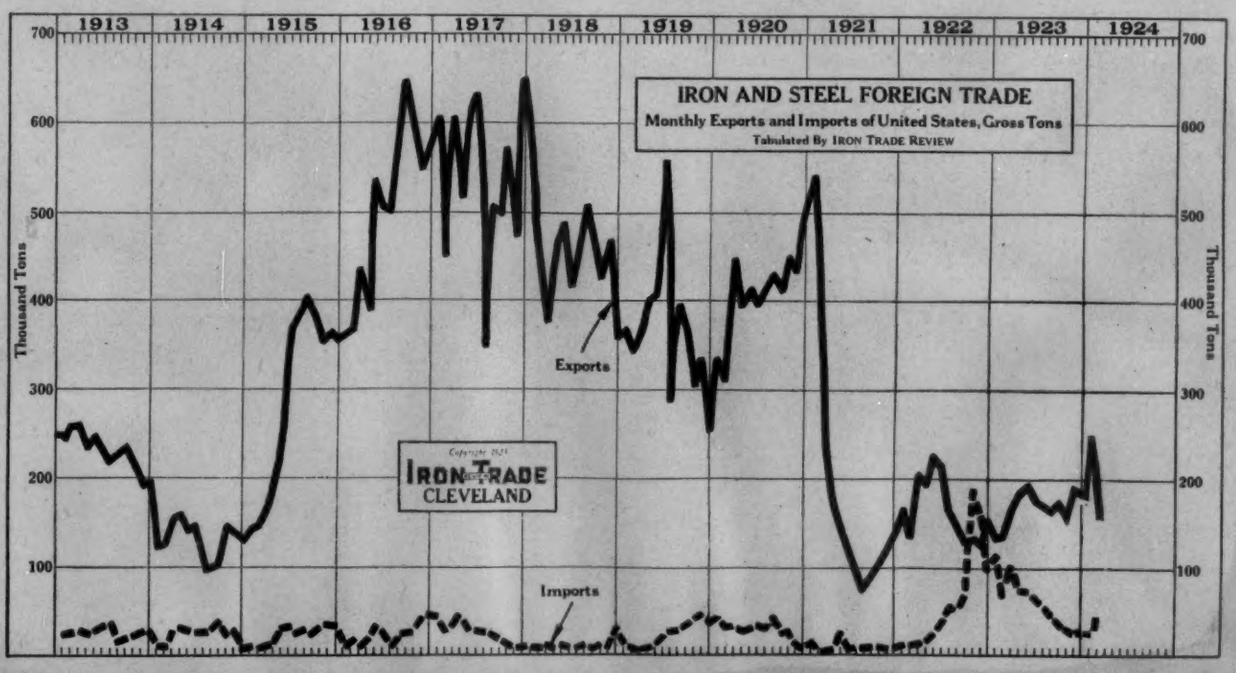


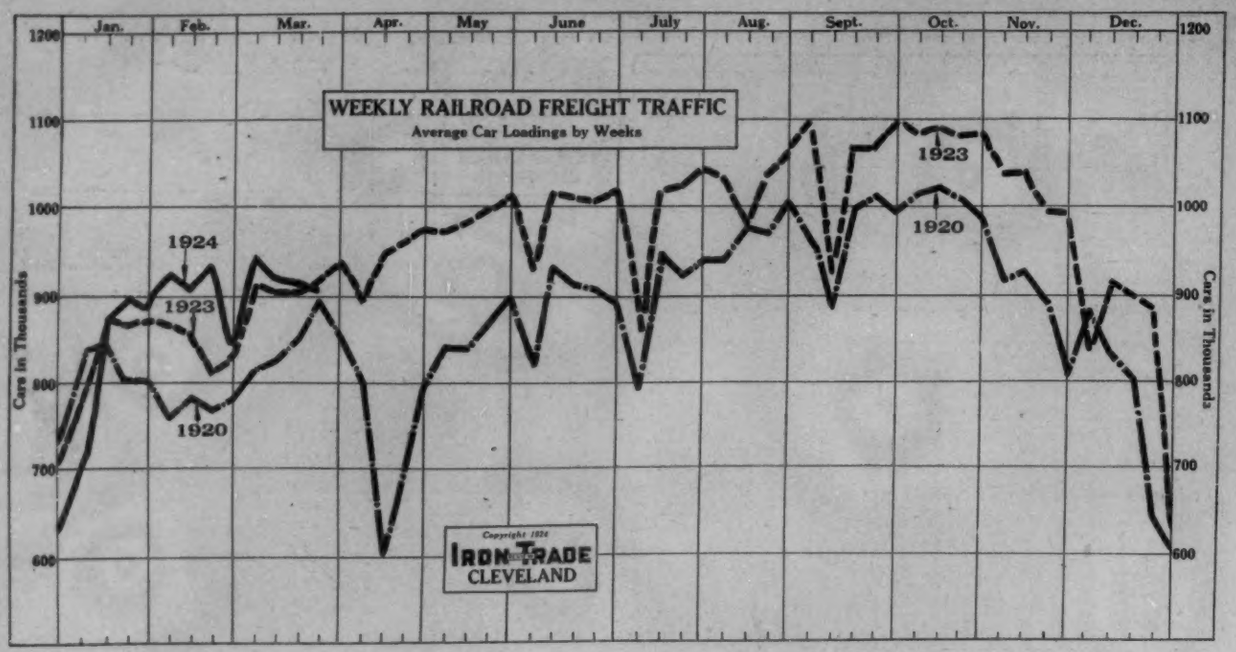
Automobile Production

MARCH, which normally brings an expansion of automobile outputs, showed a reversal of the usual tendency this year. The production of 356,000 passenger cars and trucks, according to preliminary estimates, compares with 367,000 cars in February. In February the output was 33 per cent over that for February, 1923. The March total was only 5 per cent more than it was 12 months ago. High winter production and the retarded spring caused stocks to accumulate. Production is being cut.

Steel Foreign Trade

FEBRUARY exports of American iron and steel products declined sharply from the preceding month, while imports gained. Exports of 168,191 tons compared with 252,284 tons in January. The total was higher than the exports of 135,182 tons in February, 1923, however. Imports of 42,054 tons compared with 26,677 tons in January and 67,707 tons in February, 1923. For the first two months of 1924 iron and steel exports show an increase of 61 per cent and imports a decrease of 63 per cent compared with 1923.



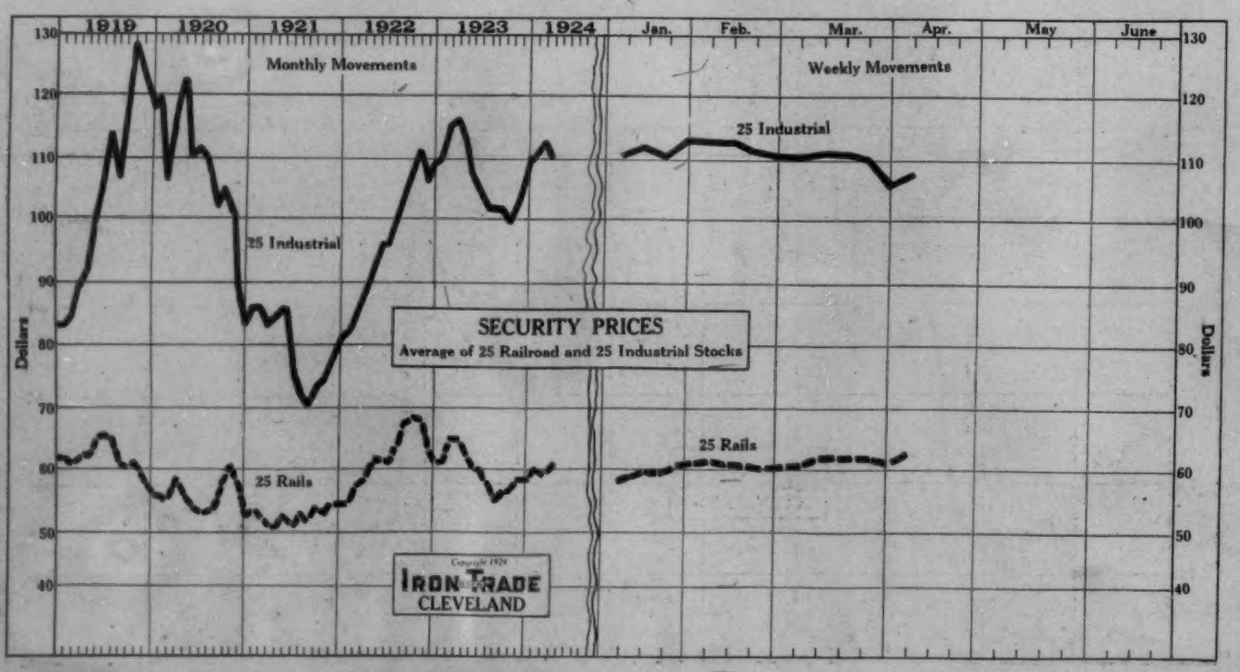


Freight Traffic

FOR the first time since the second week of January railroad car loadings in the week ended March 22 dropped below the corresponding period of 1923. Freight traffic has been declining slightly since the high point early in March. This reflects some contraction in the speed of business. With the exception of last year car loadings continue at record high levels for this season. Shrinking traffic is mirrored also in the accumulation of idle cars, now exceeding 200,000 in the country.

Security Prices

THE downward swing of security prices was checked last week, at least temporarily. Wall Street sentiment was improved by Washington events. Dwindling investigating activities, prospects of tax reduction action, and the indications of little legislation damaging to business and the railroads are all favorable. The Dawes report, bringing hope of some kind of reparations agreement, was cheering also. Railroad shares have been more buoyant than industrial stocks, partly due to the large gain in February earnings.



Make Rail Steel Products in 8 States

Fig. 1—Slitting Rolls Separate Head and Flange from Web as Rail Comes From Heating Furnace

BY E. C. BOEHRINGER

NINETEEN mills in the United States and Canada now are engaged in the conversion of old steel rails into bars and shapes, constituting an important link in the chain of economy and conservation which the iron and steel industry in the United States has been forging. Taking a rail that has passed its usefulness as such, the rail steel industry avoids the wasteful process of remelting, and by reheating and rerolling converts the rail into various sections. In their new forms, rails are given a lease of life that may exceed their original apprenticeship. Broadly speaking, nothing is wasted save the ends where the rails have been drilled, and to paraphrase the slogan of the stockyards, a rail steel mill utilizes every part of an old rail except the wear.

From a small beginning in 1893 the rail steel industry has expanded until today it embraces 19 plants, engaging capital of more than $20,000,000 and has a constructive annual capacity of about 850,000 tons of rail steel products. Informer days discarded steel rails were cut to short lengths and remelted, entailing an additional expense for melting, casting into ingots, rolling into billets and thence into the commercial product. Today's practice effects its economy by heating the rail, slitting the head, web and flange apart and immediately rolling into final form. In addition to saving the cost of remelting and to conserving fuel and labor the saving is expressed to the consumer by the normal differential of $2 a ton between rail steel and billet steel.

The author is editorial representative at Chicago of IRON TRADE REVIEW.

Light rails, reinforcing bars, agricultural implements and beds form the greatest outlets for rail steel. Its products in large tonnages also go into fence posts, road scrapers, conveying machinery, wheelbarrows, stable stanchions and carrier systems, steel building frames, scaffolding and door carriers. One large maker of steel beds requires 35,000 tons of rail steel per year and this item is so large it has its own mill. A substantial part of the steel in farm implements was originally in rails.

Many reasons prompt a railroad to take up its old rails. Some have worn to such an extent as to make them undesirable for further use. Frequently heavier sections supplant lighter ones. On many roads the life of a rail is arbitrarily limited to 10 years in main track and 10 years in side track. Some rails now coming to rail steel mills bear identification marks of having been rolled in the early eighties. A survey of 5000 tons of rails two years ago revealed 33 per cent dated 1910 to 1920, 15 per cent dated 1900 to 1910, and 14 per cent dated 1886 to 1900. Old rails go to the mill either direct from the railroad or through an iron and steel scrap broker.

These steel rails, weighing 56 to 136 pounds to the yard, are piled according to size. Obviously, when a light section is desired the use of a light-weight rail minimizes the cost of reduction. The rails are notched and broken to length, which for average practice is 15 feet. About 16 per cent of the original weight is lost in the yard through rejections because of split heads and other defects.

The rails are heated to rolling tempera-

FIG. 2—THOUSANDS OF TONS OF OLD RAIL AWAITING ITS TURN TO BE REBORN TO NEW USEFULNESS THROUGH THE HEATING FURNACE AND MILL

Manufacturers of Rail Steel Products

Name	Location of plants
Buckeye Rolling Mill Co.	Steubenville, O.
Buffalo Steel Co.	Tonawanda, N. Y.
Burlington Steel Co., Ltd.	Hamilton, Ont.
Calumet Steel Co.	Chicago Heights, Ill.
Cambridge Steel Products Co.	Cambridge, O.
Danville Structural Tubing Co.	Danville, Pa.
Eckels-Nye Steel Co.	Syracuse, N. Y.
Elyria Iron & Steel Co.	Elyria, O.
Franklin Steel Works	Franklin, Pa.
Inland Steel Co.	Chicago Heights, Ill.
Kansas City Bolt & Nut Co.	Kansas City, Mo.
Laclede Steel Co.	Madison, Ill.
Pollak Steel Co.	Marion, O.
Republic Iron & Steel Co.	Moline, Ill.
Southern Steel & Rolling Mill Co.	Birmingham, Ala.
Sweet's Steel Co.	Williamsport, Pa.
United States Rail Co.	Cumberland, Md.
West Virginia Rail Co.	Huntington, W. Va.
Wisconsin Steel Co.	Chicago.

ture in a continuous heating furnace where the maximum temperature is 3000 degrees. After an hour to an hour and a half, an automatic electric pushout forces the rails, at 2400 degrees, upon a conveyor. This conveys the rail on its side to an 18-inch mill where the rolls slit it into head, web and flange. The head and flange continue on the conveyor to 14-inch mills where they pass through the roughing rolls, receive several strand passes, and then on the finishing rolls are given their final form. The web goes to other roughing and finishing rolls and is accorded similar treatment.

So far as mill practice is concerned, the rail steel process is direct and simple. Once slit into three parts it is a question of passing each part through rolls that will produce rounds, squares, flats, equal leg angles, unequal leg angles, channels, tees, or channel flats, cultivator beams, base U-bars, harrow I-bars, diamonds, triangles and hexagons for the agricultural implement trade. On leaving the rolls the finished products go to cooling beds and then to the shears to be cut to length, or punched, as their use dictates. For some products passage through a straightening machine is necessary.

Where Sections Come From

Mill practice continually is becoming more flexible, but at present smaller sizes of finished products usually are rolled from the web, larger sizes from the head and intermediate sizes from the flange. Requirements for metal beds consist largely of angles, which are rolled from any part of the rail, dependent upon the size desired. In some cases, tubing rolled from the flange is employed. A process for rolling tubing from a complete rail is being sought by some rail steel mills. For fence posts, T-sections or angles are utilized. The head and the flange of the rail usually are the starting point.

All parts of a rail can be used for producing reinforcing bars but general practice is to roll small bars from the web, large ones from the head and medium-sized ones from the flange. As in the case of bed angles and fence posts, the process of manufacture is passing the appropriate part of the slit rail through the proper rolls. For agricultural implements a wide range of sizes in U-bars, I-bars, channels, flats, angles, diamonds, hexagons and triangles is rolled.

Rolling of light rails from heavier sections is accomplished by heating and reduction through rolls to the desired section. Light rails, 8 to 60 pounds to the yard, find extensive use in mines. Hot-sawing to length, cooling, straightening, punching for splice bars and final inspection parallel these steps in the manufacture of the original rail. Scrap losses in the mills average 12 per cent.

Concerning the physical properties of rail steel bars there has been much controversy. There are uses to which rail steel bars, formerly called hard steel bars and carbon bars, cannot be put, but for their well-defined uses their producers claim they have greater value than soft steel. Makers do not recommend them for cold bending, although much of this can be done, especially in concrete work, but they can be bent and forged hot as readily as softer steel. It is claimed that rail steel can be punched or sheared cold and threaded practically

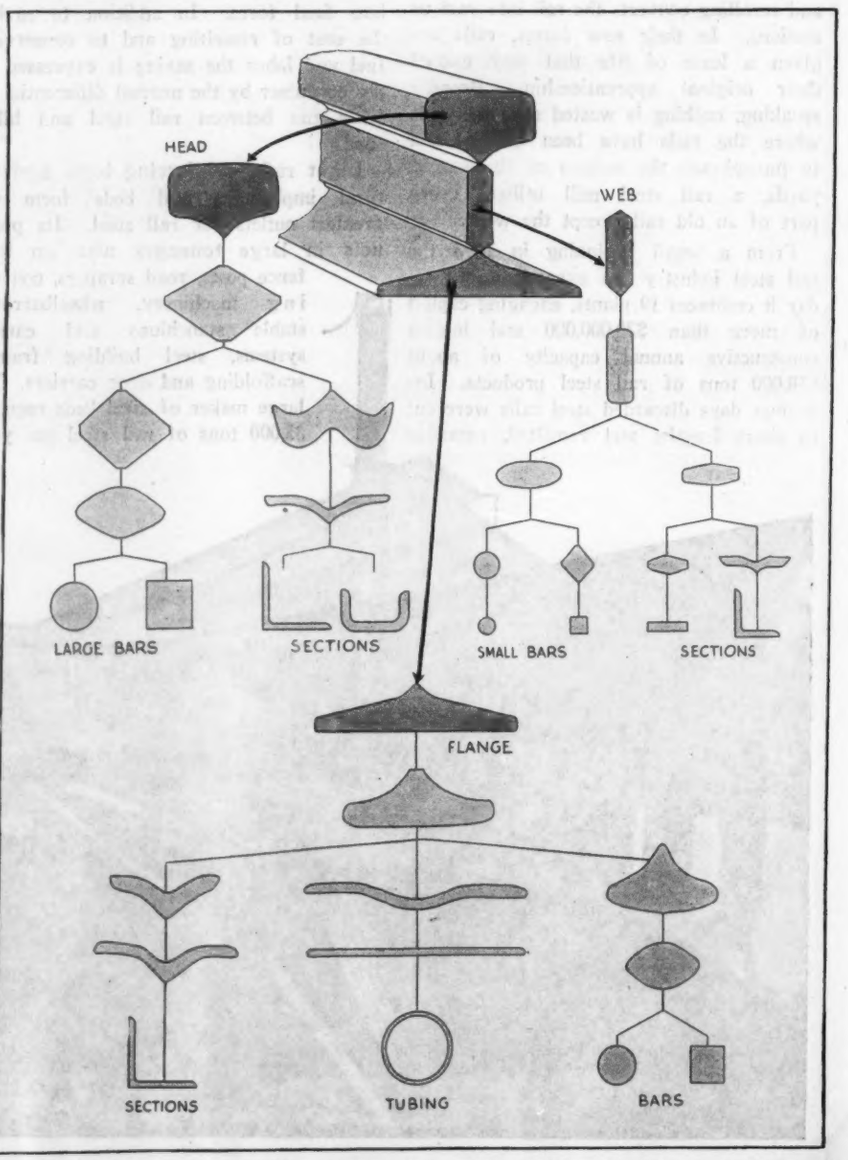


FIG. 3—DIAGRAMMATIC EXPLANATION OF HOW EACH SECTION OF RAIL IS CONVERTED INTO NEW SECTIONS

as easily as soft steel. Rail steel normally will conform to the limits set up in the manufacture of the original rail. Whatever strain may have been created in the rail is removed when it is heated prior to the slitting or reduction process. Inasmuch as each heating and working of steel refines it further, rail steel has the advantage of additional treatment. The elastic limit of rail steel is about 60,000 pounds and the tensile strength about 85,000 pounds. For punching and shearing rail steel up to ⅜ inch thick the diameter of punches should be at least 1/16 inch larger than the thickness of steel to be punched, and from ⅜ to ½ inch the diameter should be 3/32 inch larger. Punches and dies work better if somewhat softer than those used for soft steel. They should be drawn to a blue-bronze color. Shears and punches should be run at about 75 per cent of the speed used for soft steel. In extremely cold weather it is desirable to take the chill out before punching or shearing.

Many safeguards surround the source of the raw material for rail steel bar mills. Rails for rolling purposes are purchased by the mills according to the following specifications: "All rails are contracted for on the basis of being No. 1 steel rails suitable for rolling and must be to the following specification: 50 pounds per yard or heavier, 5 feet or over in length, free from frog, switch, guard, curve, bent or twisted and split head rail."

Of the 19 mills now engaged in rolling rail steel products 5 are in Illinois. Ohio comes second with 4, Pennsylvania has 3 and New York 2. Missouri, Alabama, Maryland and West Virginia have 1 each. The only Canadian rail steel mill is in Ontario.

The American Society for Testing Materials has set up specifications for rail steel concrete reinforcing bars which are presented in the accompanying box.

Major Applications of Rail Steel

Agricultural implements
- Beams, I-bars, rounds, squares, channels, flats, channeled flats, arch bars, triangles, diamonds, hexagons, ovals and octagons
- Special sections for cultivators, plows and harrows

Automobile bumpers

Barn equipment
- Carrier system tracks
- Door hangers
- Hay racks
- Stanchion frames

Beds
- Legs and ends of cots
- Side and end rails
- Spring frames
- Tubular sections of metal beds

Canopies

Construction
- All forms of reinforcing, except spirals
- Clamps on column ties
- Column ties
- Footing and wall bars
- Road work, in some states
- Slab and beam bars
- Stirrups

Fence posts

Fire escapes

Greenhouse window sash

Hardware

Ladder side frames and rungs

Pole line hardware
- Cross-arm braces
- Spikes

Porch swing frame work

Portable conveyors
- Cross bracing
- Frame work

Railroads
- Brake beams
- Freight car ladders
- Light steel rails

Sign posts

Stoves
- Frame work of ovens
- Pokers

Surveyor's stakes

Washing machines
- Legs
- Supports

Windmill towers

Standardize Plow Bolts

Representatives of the manufacturers of bolts and nuts and of agricultural implements, the department of commerce and the American engineering standards committee, meeting in Washington recently, adopted recommendations calling for the elimination of more than 40 per cent of the types of plow bolts. The conference also came to an agreement as to what should constitute standard sizes of carriage bolts and nuts used in the agricultural implement trade. Action was taken to recommend to all manufacturers, distributors and consumers that the new program should become effective on new production on Jan. 1, 1925 and on existing stocks on Jan. 1, 1926.

The report of the Walworth Mfg. Co., Boston, shows net profits of $1,434,947 after federal taxes and interest equal after preferred dividends, compared with profits of $500,618 in 1922.

Specifications for Rail Steel Reinforcement

1. The specifications cover three classes of rail-steel concrete reinforcement bars, namely: plain, deformed, and hot-twisted.

2. *Manufacture.* The bars shall be rolled from standard section tee rails.

3. Hot-twisted bars shall have one complete twist in a length not over 12 times the thickness of the bars.

4. *Physical Properties and Tests.* (a) The bars shall conform to the following minimum requirements as to tensile properties:

Properties Considered	Plain bars	Deformed and hot-twisted bars
Tensile strength, lb. per sq. in.	80,000	80,000
Yield point, lb. per sq. in.	50,000	50,000
Elongation in 2 in., % =	1,200,000 / Tens. Str.	1,000,000 / Tens. Str.

(b) The yield point shall be determined by the drop of the beam of the testing machine.

5. (a) For bars over ½ inch in thickness or diameter, a deduction of 1 from the percentages of elongation specified in section 4 (a) shall be made for each increase of ⅛ inch in thickness or diameter above ¾ inch.

(b) For bars under 7/16 inch in thickness or diameter, a deduction of 1 from the percentages of elongation specified in section 4 (a) shall be made for each decrease of 1/16 inch in thickness or diameter below 7/16 inch.

6. Test specimen shall bend cold around a pin without cracking on the outside of the bent portion as follows:

Thickness or diameter of bar	Plain bars	Deformed and Hot-twisted bars
Under ¾ inch	180 deg. d-3t	180 deg. d-4t
¾ inch or over	90 deg. d-3t	90 deg. d-4t

d—Diameter of pin about which the specimen is bent.
t—Thickness or diameter of the specimen.

7. (a) Tension and bend test specimens for plain and deformed bars shall be taken from the finished bars, and shall be of the full thickness or diameter of bars as rolled; except that the specimens for deformed bars may be machined for a length of at least 9 inches, if deemed necessary by the manufacturer to obtain uniform cross section.

(b) Tension and bend test specimens for hot-twisted bars shall be taken from the finished bars, without further treatment.

8. (a) One tension and one bend test shall be made from each lot of 10 tons or less of each size of bar rolled from rails varying not more than 10 pounds per yard in nominal weight.

(b) If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

(c) If the percentage of elongation of any tension test specimen is less than that specified in section 4 (a) and any part of the fracture is outside the middle third of the gage length, as indicated by scribe scratches marked on the specimen before testing, a retest shall be allowed.

9. *Permissible Variations in Weight.* The weight of any lot of bars shall not vary more than 5 per cent from the theoretical weight of that lot.

10. *Finish.* The finished bars shall be free from injurious defects and shall have a workmanlike finish.

11. *Inspection and Rejections.* The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the bars ordered. The manufacturer shall afford the inspector free of cost, all reasonable facilities to satisfy him that the bars are being furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be conducted as not to interfere unnecessarily with the operation of the works.

12. Bars which show injurious defects subsequent to their acceptance at the manufacturer's works will be rejected, and the manufacturer shall be notified.

Electric Reduction Furnace Iron

Pig Iron Made in Electric Reduction Furnace Is of High Quality and Is Adapted to Foundry and Steelmaking Use—Economic Conditions and Inexperience of Operators Have Retarded Industry

BY R. C. GOSROW

PROCESSES for reducing iron ore electrically have been going through a progressive development for a number of years. In North America this work is comparatively recent, the efforts to reduce domestic ores, in various parts of the United States and Canada dating from 1907.

Establishing electric iron smelting plants in the United States has been handicapped by many factors. Most of the plants have been built close to power, or to the smelting materials and far from consuming markets for the product.

The early development of the electric reduction process was experimental and no financial returns were realized by those interested. The dependability of buying pig iron from established blast furnace operators, and the inability of the electric furnace operators to assure a uniform product, made it difficult to establish faith in the process among users of pig iron. At the present time the electrothermic reduction process is established metallurgically, but it is not sure of its position commercially.

The electrothermic process depends chiefly on a low unit power cost, the realization of which depends on the use of power from large central generating stations and in large energy consuming districts. Therefore the expansion of electric reduction plants depends on the cost of energy to the consumer.

In Europe, principally in Sweden and Norway, the stack type of furnace is the most favored. The product from this furnace, when smelting magnetic ores, has been low silicon iron, containing less than 3 per cent carbon (total). The iron has been used mostly for melting in basic open-hearth furnaces.

In the United States the stack and open-top types of furnaces have both been used. The writer has demonstrated the open-top furnace as more economical and successful in the smelting of ores of the ferrous group of metals.*

A furnace is operated so as to supply a definite demand for iron. As new markets develop, electric reduction furnace iron may be a factor in supplying the demand and creating new products. Analysis of iron for the several uses of the ferrous industries and within the capabilities of the electric furnace are presented in Table I. The production of these irons depends on the grade of ore smelted, the quality and character of the reducing material, the design of the furnace and furnace manipulation.

Electric reduction furnace irons can be cast in pigs, slabs, or any convenient sizes for foundry cupola and steel furnace uses, and can be sand or chill cast.

Electric reduction furnace foundry irons exihibit a finer and closer-grained structure than the equivalent composition in blast furnace irons and therefore they are always sold on analysis only. They may be classified identically with blast furnace irons, based on the silicon content range. The fracture examination is of small real importance, when the iron is to be remelted subsequently for castings.

Fine Grain Structure

The finer grained structure has been attributed to the conditions of melting to the highly reducing atmosphere in the crucible of the electric reduction furnace, and to the absence of oxygen. Research also has attributed the fine grain to the formation of considerable pearlite in the microstructure. The conditions of cooling the iron in pig beds have been conducive to the formation of a large crystal structure. It was the practice, when finishing casting, to immediately cover the fresh cast beds with sand to about 2 inches deep. This was allowed to cover the iron until it had cooled to black. Water never was used on the pig beds until after the iron was black in the sand.

The following shows the total carbon and graphitic carbon contents of some casts of electric reduction furnace iron for iron foundry use.

Total carbon per cent	Graphitic carbon per cent	Combined carbon per cent	Silicon per cent
3.40	3.16	0.24	2.40
3.54	3.24	0.30	2.80
3.44	3.08	0.36	2.00
3.45	3.02	0.43	2.20
3.36	3.05	0.31	3.05
3.28	2.94	0.34	2.35
3.66	3.11	0.55	3.08
3.28	2.96	0.32	2.20

In the case of these irons, the reducing agent in the charge was charcoal. When coke was used as the reducing agent, the sulphur content in the iron increased from 20 to 50 per cent, and the graphitic carbon in the iron dropped to a point corresponding to a 30 per cent lower silicon content. These conditions were traceable to a cold furnace, and the effect was evidenced on the iron.

When remelted in the cupola, electric reduction furnace foundry irons produced iron castings of a superior, fine, soft, easily machinable quality, and possessed great toughness. Iron foundrymen have told the writer, that they "always mix in a little of the electric iron," when they have it, "to toughen the mix." Just why the electric iron should "toughen the mix" is not definitely established.

At this point it is desirable to refer to the iron known as "synthetic iron," which now is quite widely manufactured from steel turnings and melted and refined in the electric melting furnace. This iron usually is run directly into castings, but some has been produced in pig form to be used in pigging-up in electric steel furnace operations. Some of the iron manufactured in this way was cast in sand pigs and used as wash metal in the steel furnaces because of the purity obtained. There is no apparent reason to expect that synthetic iron will be used in any large tonnage in the form of pig iron, but it is likely that the two irons may be confused, both being products of the electric furnace. For this reason the distinction between the two irons always should be emphasized. Electric reduction furnace irons are the product of the reduction furnace, and are derived from the reduction of iron ore. Synthetic iron is the product of the melting furnace and is derived from the melting and refining of steel scrap.

Electric reduction furnace basic iron, for steel making may be chill or sand cast. The chill cast iron is free from sand and adhering dirt. In these irons analysis is the basis of sale and use. The structure compares more nearly to that in the blast furnace irons.

In the electric reduction furnace, using the same ore, the same coke, and the same fluxes, it is possible to make an iron lower in sulphur and phosphorus than in the blast furnace. In electric reduction furnace practice, an average of 880 pounds of coke (83 per cent carbon) are required per ton of

*"A Comparison Between Shaft and Open-Top Furnaces in the Manufacture of Pig Iron Electrically from Iron Ore"—*Transactions*, American Electrochemical society, Vol. XLI, page 109, 1922.

The author is consulting electrochemist, Chicago.

pig produced. The iron: sulphur and the iron: phosphorus ratios on the charge are considerably different than they are in the blast furnace. Furthermore in the electric reduction furnace, a certain amount of slag must be made and a maximum must be controlled. The iron is cleaned by its passage through a slag bath just as it is in the blast furnace, so that a clean iron can be produced.

The economy of melting a heat of steel in the open-hearth furnace is dependent on the time rate of melting down, time for refining, and time for fixing the final analysis of the melt. In melting low carbon steel scrap (0.10 to 0.30 per cent carbon), the high temperature of melting required by this charge, as compared to melting a 2.2 per cent carbon charge, makes the fuel cost higher, the furnace refractory deterioration greater, and the melting down time longer. In present open-hearth practice, the major part of the charge is steel scrap. Pig iron additions are made to recarburize the melt, or to reduce iron ore. In a steel melt using electric reduction furnace basic iron, the major part of the charge is electric reduction furnace iron, (2.00 to 2.25 per cent carbon, 0.5 to 1.00 per cent manganese, and 0.4 to 0.9 per cent silicon), better designated as "pig steel" (Richards). The diluent in the charge is then steel scrap or iron ore, and the heat is finished by regular practice. The only difference existing is the use of a higher carbon melt down stock.

These remarks relative to open-hearth practice are equally applicable to electric furnace melting. The suggested changes in melting stock and practice, particularly apply to those districts where the cost of imported steel scrap is greater than the cost of locally produced pig iron, and where steel products are made for a local demand, or for export, with price advantages. The cost of steel made from "pig steel" is at present higher than steel made from scrap, but this condition may not hold good in all places. In certain parts of the United States and Canada, steelmaking pig can be produced, and steel made from it for less than from steel scrap.

Electric reduction furnace foundry irons, can be melted in the cupola, air-furnace, electric furnace or open hearth furnace and with oil, gas, electricity or coke. The characteristics of the final product indicate a high grade material, so that these foundry irons may find application for gray, white, and malleable castings.

Electric reduction furnace basic steelmaking irons are applicable to any steelmaking process, and the irons can be produced in any silicon range for bessemer, open-hearth, or electric furnace work.

While physical properties and chemical ingredients may be all that are desired in an iron, the question of cost will decide the use or rejection of the electric reduction furnace irons. Availability, quality and price have to be synchronized. While the national ferrous, industry often is considered as a whole, each district has its own material resources, manufacturing plants, and selling and consuming territory, independent of the others. Each territory is more or less defined by the grade of the products made and the economic distance those products can be moved for sale and consumption in other territories.

In order to ascertain the probable applicability of electric reduction furnace irons, based on the cost of production, the data shown in Table II has been computed. The figures are derived from conditions for ore, labor, fuel and fluxes, power and freights obtaining in the western part of the United States in 1920.

Cost Estimates

As generally given cost data show in absolute values the charges made for each item. In order to show what can be done in the way of producing electric reduction furnace irons, one would want to know what the iron can be produced for in any district, and the price at which blast furnace iron can be imported. The information is given on a percentage basis, rather than in the form of absolute values, to show the relative part each item bears to the total cost. This seemed to be a more logical way to exhibit cost estimates, inasmuch as the cost of materials and labor fluctuate within wide limits in different localities.

In certain of the western states there are large deposits of high grade ores of iron, adjacent to fluxing material and power, but there are no coking coal deposits near to the deposits of iron the sources of power and the consuming centers. It was initially intended then to use electric energy, the iron ores and fluxes, and charcoal made from timber on the nearby hills to produce pig iron. The idea was to use power and "to make iron at home." The idea of making a better product was not a motif. The quality of the iron was after the fact.

The early investors in the electric reduction process knew little about how much their iron was going to cost, and the first plants were located far from the consuming centers of industry. As a consequence the carrying charges used up any profits which might have accrued from the manufacture and sale of the iron. Experience now has taught

(*Concluded on Page* 991)

Table II

Estimated Cost Data

BASIC PIG IRON
(2.2 per cent carbon)
20,000 net tons per year

	Per cent
Iron ore and reducing material (coke)	28.6
Fluxes	4.6
Power for furnace	24.3
Electrodes (graphitized)	11.5
Furnace linings and repairs	1.3
Lights, power, stores, supplies	1.7
Labor, executive—plant—nonproducing	19.3
Fixed charges Interest. Depreciation. Amortization. Insurance.	8.7
Total	100.0

The above figures are based on a production cost of $35 per net ton.

FOUNDRY PIG IRON
(2.25-2.75 silicon)
20,000 tons per year.

	Per cent
Iron ore and reducing material (coke)	25.0
Fluxes	4.1
Power for furnace	25.4
Electrodes (graphitized)	12.5
Furnace linings and repairs	1.1
Lights, power, stores, supplies	1.4
Labor, executive—plant—nonproducing	22.9
Fixed charges Interest. Depreciation. Amortization. Insurance.	7.6
Total	100.0

The above figures are based on a production cost of $40 per net ton.

Analyses of Electric Reduction Furnace Irons

FOUNDRY IRONS

Type of furnace	Total carbon	Manganese	Sulphur	Phosphorus	Silicon	Reducing agent
Shaft (California)	3.35	0.52	0.038	0.035	2.85	Charcoal
Shaft (California)	3.30	0.60	0.080	0.062	2.30	Utah coke
Open top (California)	3.60	0.55	0.042	0.038	1.90	Charcoal
Open top (California)	3.15	0.45	0.057	0.045	2.20	½ coke—½ charcoal
Open top (California)	3.40	0.55	0.035	0.032	3.35	Coked gas carbon briquettes
Shaft (California)	2.60	0.35	0.047	0.042	1.60	

STEELMAKING IRONS

Shaft (California)	2.05	0.47	0.045	0.025	0.40	Utah coke
Shaft (California)	2.15	0.42	0.052	0.031	0.72	Utah coke
Open top (California)	2.20	0.40	0.042	0.040	0.65	Charcoal
Open top (California)	2.45	0.35	0.040	0.035	0.88	½ coke—½ charcoal
Open top (California)	2.01	0.24	0.060	0.045	0.44	Coked gas carbon briquettes, coke
Shaft (Sweden)	2.80	0.45	....	....	0.85	Charcoal

Lights 37 New By-Product Ovens

Independent Steelmaker Is Pioneer in Adopting New Type Narrow Oven—High Volatile Coals Coked Exclusively—Temperature in Heating Walls Lowered Without Sacrificing Coking Period—Description of Plant

BY C. H. HUNT

WHEN the new by-product coke plant of the Weirton Steel Co. was placed in operation last July, the company completed the final link in its control of manufacture from the raw material to the finished product. In addition, this plant inaugurated a new era in by-product coke making, this battery of ovens being the first 14-inch ovens in the steel industry operating on high capacity short coking period for the production of blast furnace coke from high volatile coal exclusively.

The plant was built along the Ohio river bank parallel to the tin mill plant. River equipment and unloading docks and loading facilities up river to permit of transporting coal by water are to be installed shortly. Storage space provides for 280,000 tons of coal as insurance against a low or frozen river and other contingencies. This location permits a system of gas lines for distributing surplus gas from the coke plant to various departments where its use will effect economies, and with the completion of river transportation will make possible the delivery of coke to the blast furnace entirely within the company's control and at lowest cost.

All scrap produced by the finishing mills, most of which is light sheet scrap from the sheet and tin mills and crops from the hot and cold strip mills, is used at the open-hearth plant. This material being hard to handle to the furnaces and slow to melt down, it is essential for rapid production to receive a maximum amount of hot metal from the blast furnace. The amount of hot metal and scrap produced is not sufficient to make the quantity of steel required, so that it is necessary to purchase scrap.

Therefore, in considering a by-product coke plant, the first requisite was for a coke which would permit maximum blast furnace production using a large percentage of the company's ores. The company purchased the entire interest in the mine and property of the Redstone Coal & Coke Co. in November, 1922 and also owns 1000 acres of coal on the Monongahela river at Brownsville, Pa., so that the second requisite was that this coke be made from the maximum percentage of this high-volatile coal.

The problem then was to determine whether a coke possessing the following qualities and characteristics generally accepted by blast furnace and coke oven operators as necessary for good blast furnace performance, could be made from 100 per cent high-volatile coal:

1. Good combustibility so the coke would burn equally at the tuyeres of the blast furnace, maintaining the zone of combustion low down in the bosh of the furnace where it is needed.
2. Strength to prevent crushing in the furnace due to weight of the burden.
3. Uniformity of cell structure.
4. Absence of cross fracture causing it to break in small pieces when being handled from coke plant into furnace.
5. Of blocky instead of fingery structure.
6. Uniformity of size.

Various coking coals and mixtures of coals require different treatments during the coking process, such as length of coking time and degree of heat under which the coking is completed to produce coke best suited for blast furnace purposes. The following is a fair average analysis of the coal to be coked:

	Per cent
Volatile matter	33.25
Fixed carbon	57.97
Ash	8.50
Sulphur	1.09
Moisture	2.5 to 3.5

In the new type Koppers oven, which

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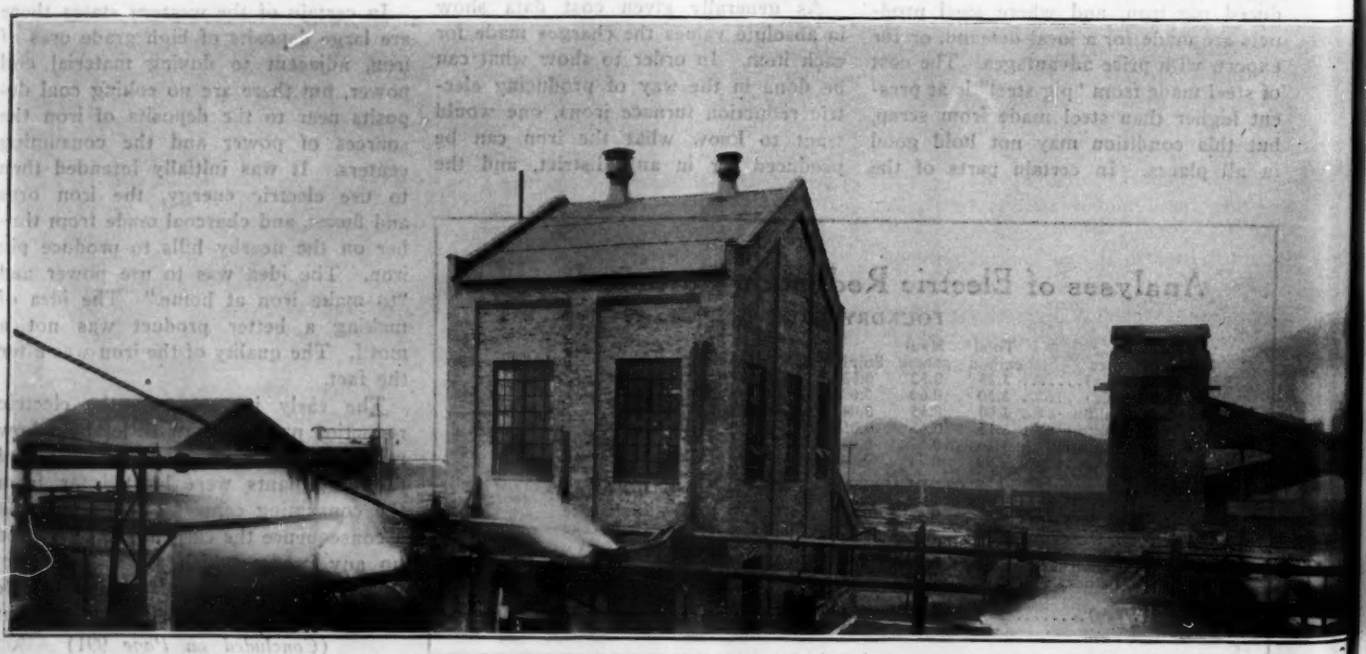


FIG. 1—GENERAL VIEW OF THE WEIRTON STEEL CO'S NEW COKE PLANT FROM THE BY-PRODUCT SIDE, SHOWING BE
ZOL COKE OVENS I

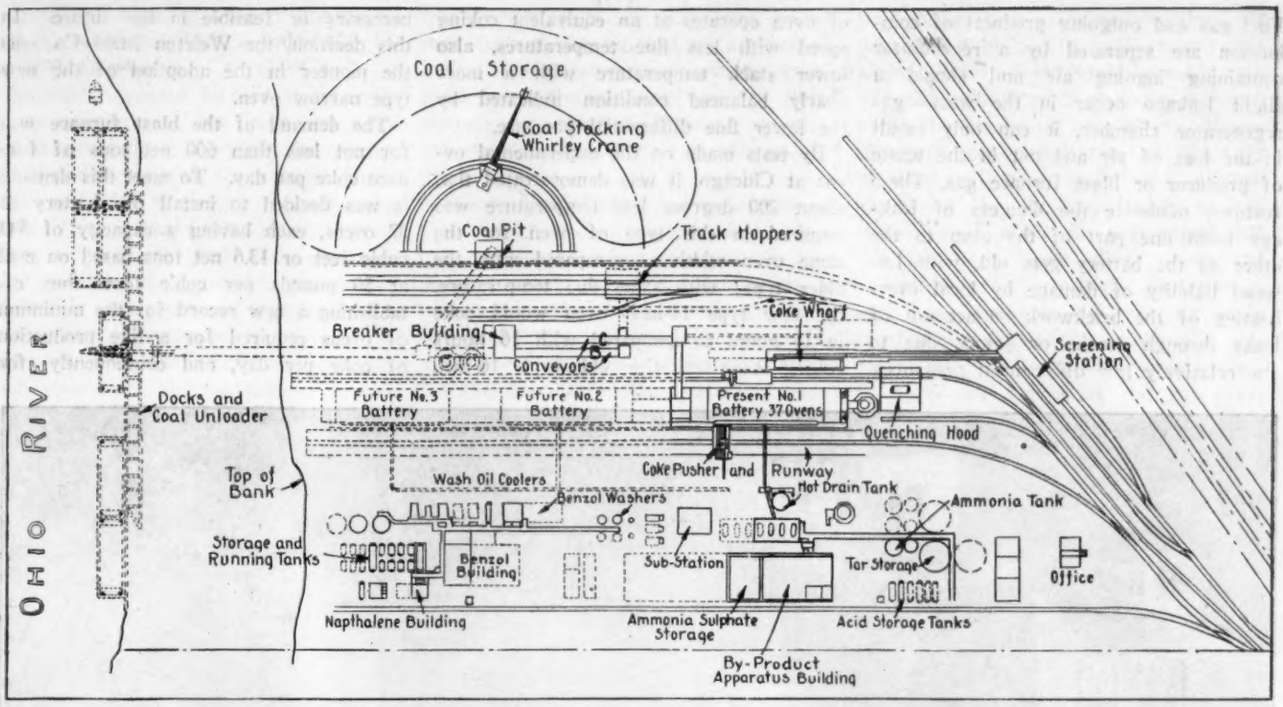


FIG. 2—LAYOUT OF THE NEW BY-PRODUCT COKE PLANT. FULL LINES SHOW THE PART COMPLETED AND IN OPERATION WHILE THE BROKEN LINES INDICATE FUTURE CONSTRUCTION

is of the vertical rectangular flue design, one side is heated in its entirety. The products of combustion joining in the horizontal flues pass over the top of the oven through cross-over flues one pair of which is located on the coke side and the other pair on the pusher side. The products of combustion then enter the horizontal flues of the adjacent heating wall and pass downward throughout the entire wall into the regenerators. The flow of gases has been worked out so that there is a minimum leakage between individual flues since adjacent flues are all working under the same flow and pressure condition, there being no counterflow in any adjacent heating flues. This theory also has been carried out in the arrangement and design of the regenerators, which reverse longitudinally with the battery instead of crosswise.

Due to the design of these flues and the faster heat absorption, the height of the flame in the flues has been increased and extends far up toward the top of the oven with the result that the heating of the cold charge is uniform over the entire wall area.

The ovens were built with combination regenerators to permit the use of blast furnace or producer gas at any time, so that all of the coke oven gas can be utilized as fuel throughout the plants. In case producer or blast furnace gas is used, the arrangement of regenerators and flow of gas is such that there does not exist at any time counterflow between incoming fuel gas and outgoing products of combustion in adjacent regenerator chambers.

PLANT AT THE LEFT, BY-PRODUCT BUILDING AT THE RIGHT WITH THE COAL-HANDLING EQUIPMENT AND THE BATTERY OF THE DISTANCE

Fuel gas and outgoing products of combustion are separated by a regenerator containing ingoing air and should a slight leakage occur in the waste gas regenerator chamber, it can only result in the loss of air and not in the waste of producer or blast furnace gas. These features minimize the dangers of leakage from one part of the oven to the other as the battery gets old, with lessened liability of damage by local overheating of the brickwork on account of leaks through cracks or joints, due to the relatively low differential pressures.

The arrangement of flues and regenerators is such that it has been found possible to maintain lower uniform stack temperature which indicates less waste of heat to the stack and lower fuel consumption for heating the ovens due to more efficient heat distribution and transmission to the coal. The following comparison at the Chicago By-Product Coke Co. indicates the foregoing advantage of the new design of oven:

	Width of oven, inches	
	14	16
Coking time, hours	14	16
Flue temperature, degrees Fahr.	2,300	2,550
Stack temperature, degrees Fahr.	500	575
Fuel gas pressure, millimeters	150	90
Stack draft pressure, millimeters	23	14
Flue differential, millimeters	6	9

It will be observed that the new type of oven operates at an equivalent coking speed with less flue temperatures, also lower stack temperature with a more nearly balanced condition indicated by the lower flue differential pressure.

By tests made on the experimental ovens at Chicago, it was demonstrated that about 200 degrees less temperature was required in this type of oven for the same oven width as compared with the older type; with same flue temperature, the new type 14-inch oven would coke in 11 hours as compared with 16 hours coking time of the old type 16-inch oven; the coke from the new ovens is more uniform in temperature, size and structure when pushed because it is unnecessary to overcoke one portion of the oven in order to properly coke another; porosity of coke from 16-inch oven is 52 per cent compared with 55 per cent from the 14-inch oven; the shatter test shows 10 per cent better on coke from 14-inch oven and with better combustibility; and that coke can be made from high-volatile coal with lower temperatures in the heating walls in the new type of oven as compared with the old type without sacrificing speed.

These various points were considered sufficient to justify the building of a plant to operate exclusively with high-volatile coal, although provision has been made for the installation of pulverizers and for mixing coal should it be deemed necessary or feasible in the future. In this decision, the Weirton Steel Co. was the pioneer in the adoption of the new type narrow oven.

The demand of the blast furnace was for not less than 600 net tons of furnace coke per day. To meet this demand is was decided to install one battery of 37 ovens, each having a capacity of 544 cubic feet or 13.6 net tons based on coal at 50 pounds per cubic foot, thus establishing a new record for the minimum of ovens required for a like production of coke per day, and consequently, for minimum investment required per ton of coke produced. The builder guaranteed this production of 600 tons of furnace coke per day over a 1¼-inch revolving grizzly screen, coke passing through the grizzly to be rescreened on a 1¼-inch shaking screen and all coke passing over this screen to return to the furnace coke.

The ovens are 41 feet long, 12 feet 8 inches high from face to face of doors, 13¼ inches wide at the pusher side and 14¾ inches wide at the coke side, an average of 14 inches width. The ovens are spaced 3 feet 6¼ inches from center to center and are the Koppers patented cross-regenerative combination type with two regenerators per oven, so that they can be operated in the future with either producer gas or coke oven gas. The heating chambers are rectangular flue construction with 31 ver-

FIG. 3—GENERAL VIEW OF THE BATTERY SHOWING THE COAL BIN AND HEAD OF COAL CONVEYORS AT THE LEFT AND THE GAS COLLECTING MAIN ALONG THE BATTERY WITH CROSSOVER MAIN LEADING TO THE BY-PRODUCT BUILDING AT THE RIGHT

tical flues. Four cross-over flues connect the horizontal flues on either side of the oven chamber.

Insulating material is used at the ends of the regenerators, the horizontal flues and the cross flues. Cast-iron face plates are provided between the vertical buckstays and the brickwork between the ovens. These plates in section are of the same height as the jamb brick and extend inward to form the jamb for the doors; the lintels also are faced with cast-iron lintel plates. Insulation is provided in spaces between the brickwork and the jamb plates and also as packing in the oven doors, assuring comparatively cool benches. The pusher side bench is 7 feet 4 inches wide and the coke side bench 7 feet 10 inches wide with smooth finished reinforced concrete floors. The latter extend across at each end of the battery to form connecting walks.

Separate Buildings Provided

A brick enclosed room at bench level at the east end of the battery and back of the pinion walls contains the reversing mechanism and battery instruments while at the opposite end of the battery underneath the coal bin at bench level are two rooms also brick enclosed. One of these houses contains the wet pan and handling facilities for mixing luting clay and provides storage, while the other is a service and sanitary station for battery coal and coke handling men. Fuel gas for heating the ovens is delivered from the 10,000-cubic foot fuel gas holder through a 16-inch main which feeds two 12-inch branches equipped with individual venturimeters and arranged one on each side of the battery. Gas from the 12-inch mains is introduced alternately to each side of the ovens by reversing cocks and connections with regulating cocks to the gun brick connecting to the ports in each heating flue. The gas gun castings are provided with decarbonizing caps connected with the reversing mechanism so that they open on reversal of the gas to the opposite side, admitting a small quantity of air through the gun brick and nozzles burning out any carbon deposited there.

Air for combustion enters the regenerators for each oven through cast-iron reversing valves. Four valves are provided for each oven, one on each end of the two regenerator chambers. These valves also serve to convey the waste gases to the waste heat flues, a cast-iron disk valve operating between air and flue openings. A hand adjustable butterfly damper in the flue connection to each valve provides individual regulation of the draft conditions from the regenerators while finger bars over the air inlet openings control the amount of air admitted. This arrangement affords complete control of air and draft to compensate for relative distance of oven to stack and other variable conditions.

Waste heat flues from each side of the battery are connected to a common reinforced concrete stack, 8 feet diameter and 200 feet high with a perforated radial brick lining. A regulating damper is provided in each waste heat flue and a stack damper in the flue leading to the stack, thus affording means for controlling the draft on each side of the battery and for the battery as a whole. As is common in the Koppers type ovens, with means for regulating the admission of gas and air to each vertical heating flue by changeable gas nozzle brick and by adjustable sliding brick over each flue regulating the down draft in each flue, every facility is provided to control the heating so as to maintain uniform temperature from end to end of the ovens and in all ovens from end to end of the battery. This has proven of particular advantage in this plant for properly coking high-volatile coal. All air and draft valves and gas reversing cocks are operated by a single reversing unit, motor driven and timed to reverse every 20 minutes by an electrical timing device energized by a clock.

Gas from the oven enters the 60-inch diameter collecting main through ascension pipes provided with cast-steel butterfly valves. It leaves the ovens at a temperature of approximately 1000 degrees Fahr. and is sprayed with tar and ammonia liquor by sprays located about every 4 feet along the main, so that the gas enters the suction main at less than 210 degrees Fahr. The collecting main slopes from both ends toward the 36-inch suction main connection located at the center of the battery. Heavy tars are condensed out of the gas in the collecting main and washed along by the flushing liquor to the suction main which is so arranged that the tar and liquor flows from the collecting main through pitch traps and back through the suction main to the hot drain tank, while the gas passes through a by-pass with butterfly valve for regulating the gas pressure in the collecting main. This valve is controlled by an automatic governor operated by oil pressure.

The accompanying layout of the plant indicates the provisions for future extensions including coal handling facilities from river barges. Coal is received at present by rail and can go direct to the ovens or be sent to storage by discharging from the bottom of the cars into an unloading pit and thrown back onto the storage pile by a fixed radius whirly crane operating on a semicircular track. This crane is equipped with a 5-cubic yard bucket and a boom 100 feet long. It also is utilized for reclaiming from storage into cars for delivery to the ovens, this arrangement being adequate until such time as additional batteries are added, when more extensive storage and reclaiming facilities are contemplated.

Coal going to the ovens is delivered to the unloading building at yard level and from the bottom of the cars into two track hoppers. Duplex reciprocating feeders deliver the coal onto a 36-inch belt, 20 feet below yard level, which conveys up an 18-degree slope to the junction house at yard level and

Table I

Blast Furnace Results from Fuel Variation

	August	December
Average daily output, tons	610.8	757.8
Average on ore only, tons	610.8	626.6
Pounds coke per ton iron	2,078	1,667-2,001 on straight ore basis
Stone per ton iron, pounds	700	583
Ore per ton iron	3,880	3,015
Sinter per ton iron, pounds	486	369
Turnings, pounds	None	441
Mesaba ore used, per cent	76.0	91.5
Wind blown, cubic foot	43,290	43,875
Hot blast pressure, pounds square inch	18½	19¼
Hot blast temperature, degrees Fahr.	1,005	979
Top temperature, degrees, Fahr.	355	326
Average iron analysis—	Per cent	Per cent
Silicon	1.34	1.20
Sulphur	0.034	0.038
Phosphorus	0.369	0.284
Manganese	2.12	1.73
Coke used:	Per cent	Per cent
*By-product	81.9	100
Revere	9.6	...
Stock	8.5	...

*By-product made from 100 per cent high-volatile coal.

onto a 36-inch belt at right angles, also at a slope of 18 degrees to the top of the breaker building 35 feet above the level of the yard. The breaker building houses a 12 x 17-foot Bradford-type breaker, which breaks the coal up to pass through 1½-inch diameter perforations. All refuse, slate, bits of iron, etc., are discharged from the end of the breaker over a chute into a car at the north end of the building. The conveyor chutes and building are arranged for extension to accommodate a second breaker.

Coal after passing through the breakers is conveyed by a 30-inch belt up a 20-degree incline to a transfer tower and then at right angle for a distance of 85 feet over a 30-inch belt to the head house over the coal bunkers 110 feet above yard level. The coal bunker located over the west end of the battery has a capacity of 1000 tons and is divided into two sections. Provision is made for addition of bunkers to hold 3000 tons of coal to serve an ultimate of three batteries of ovens and for the installation of a shuttle conveyor at that time to deliver coal from the head of the conveyor to any bin. All conveyors are designed so that 3000 tons of coal can be handled in 10 hours by increasing the speed of the belts.

Coal is drawn from the bunkers through four manually-operated cut-off gates in the bottom of each bin into a specially designed larry car having four cone shaped hoppers. Attached at the top of each hopper just beneath the coal gates is an annular ring 3 feet in diameter of adjustable height, through which the coal flows into the hopper and into which the coal rises when the hopper is filled. The height of the coal in this ring serves to measure the volume of coal in the hopper so that when charged into the oven and leveled, a predetermined space remains between the top of the coal and the top of the oven for the rapid passage of the gases out of the oven chamber. This measuring successfully serves the requirements in place of the usual scales on the larry car.

On completion of the coking period, which at present is 11 hours 46 minutes, the coke is pushed from the oven by the usual type pusher and leveling machine, except that on account of the unusual height of the oven chambers and consequently the increased height of the regenerators, the sill line being 14¼ feet above yard level, a sturdier heavier machine was designed due to the height of the ram above the rails. The extractor for the doors on the pusher side is a part of the pusher machine. During the operation of leveling the coal in the top of the oven, a small amount of coal is withdrawn by the action of the leveler bar. This coal is caught and accumulated in a hopper on the pusher machine and periodically discharged into a hopper below yard level and adjacent to the coal bin structure. From here it is conveyed by an apron conveyor under the bench enclosure to a bucket elevator and elevated to a small bin at the side of the coal bin from which it is returned by the larry car to the ovens.

Motor Drives Are Employed

A new heavier type door extractor was designed by the Koppers company for handling the doors on the coke side of the battery; the door lifting levers, door pulling mechanism and travel along the bench are all motor operated. This machine propels and spots the coke guide in position ready for pushing. Two quenching cars are provided, one being a spare. These are of the usual type lined with cast-iron plates and having discharge doors operated by air cylinders which are controlled from the cab of the 20-ton electric quenching locomotive by the driver.

The quenching station located at the stack end of the battery consists of a rectangular brick structure 17 feet wide, 50 feet long and 48 feet high and open at the top, its area being sufficient to entirely enclose the quenching car. Ample arches at each end allow the car and locomotive to be taken through for repair or replacement and for a standard locomotive or locomotive crane to run in on the quencher track for emergency purposes. Water for quenching is supplied by a 12,000-gallon tank elevated on a steel structure and flows by gravity into sprinkler pipes supported and located over the car so as to quickly and uniformly quench the hot coke, requiring about 40 seconds.

Water and small coke from the quenching car flows to a settling basin, the coke being collected and the water flowing under baffles and through a screen into a clear well, from which

Makers of Principal Equipment

Structural steel work	McClintic-Marshall Co., Pittsburgh.
Insulating brick	Celite Products Co., Chicago.
Buff building brick	Mack Mfg. Co., Wheeling, W. Va.
Oven brickwork, paving brick	Mack Mfg. Co., Wheeling, W. Va.
Oven brickwork, clay brick	Armstrong Cork & Insulation Co., Pittsburgh.
Oven brickwork, clay shapes	Harbison-Walker Refractories Co., Pittsburgh.
Oven brickwork, silica plugs	Harbison-Walker Refractories Co., Pittsburgh.
Coke pusher	Wellman-Seaver-Morgan Co., Cleveland.
Door machine	Wellman-Seaver-Morgan Co., Cleveland.
Coal larry	Atlas Car & Mfg. Co., Cleveland.
Quenching cars, two	Wellman-Seaver-Morgan Co., Cleveland.
Quenching locomotive	General Electric Co., Schenectady, N. Y.
Coal stocking crane	McMyler-Interstate Co., Cleveland.
Bradord breaker	Pennsylvania Crusher Co., Philadelphia.
Coal conveyor idlers	Robins Conveying Belt Co., Chicago.
Coal conveyor idler roller bearings	Stearns Conveyor Co., Cleveland.
Domestic shaking screen	Robins Conveying Belt Co., Chicago.
Oven stack	Rust Engineering Co., Pittsburgh.
Gas meters, three	Builders Iron Foundry Co., Providence, R. I.
Exhausters and booster, three	P. H. & F. M. Roots Co., Connersville, Ind.
Exhauster and booster engines, three	Erie Ball Engine Co., Pittsburgh.
Hand power crane, 10-ton	Whiting Corp., Harvey, Ill.
Sulphate dryers, two	Fletcher Works, Philadelphia.
Agitator	Western Gas Construction Co., Ft. Wayne, Ind.
Wash oil circulating pumps, five	Connersville Blower Co., Connersville, Ind.
Dryer engines, two Agitator, one Wash oil pump engines, five	Engberg Electric & Mechanical Works, St. Joseph, Mich.
Water booster pumps, two	Dravo-Doyle Co., Pittsburgh.
Tar loading pump, one Still charging pumps, two Condensate drain pumps, two Lime water pumps, two Ammonia liquor pumps, two Quenching pump, one Tar flushing pumps, two	Union Steam Pump Co., Battle Creek, Mich.
Clay mixer	Phillips-McLaren Co., Pittsburgh.
Coal spillage elevator	Robins Conveying Belt Co., Chicago.
Reversing machines	Kutztown Foundry & Machine Co., Kutztown, Pa.
Reversing machine control	Cutler-Hammer Mfg. Co., Milwaukee.
Indicating pressure and vacuum gages	United States Gauge Co., New York.
Pressure gages	United States Gauge Co., New York.
Recording thermometers—recording press gages	The Bristol Co., Waterbury, Conn.
Indicating mercury thermometer, motor fuel press	Taylor Instrument Cos., Rochester, N. Y.
Controllers and diaphragms	Taylor Instrument Cos., Rochester, N. Y.
Recording hydro gages	Bacharach Industrial Instrument Co., Pittsburgh.
Piping material, fittings and valves	B. Floersheim Co., Pittsburgh.
Pipe covering	The Phillip Carey Co.,
Pipe covering	Johns-Manville Co., Manville, N. J.
Lead work	Chas. H. Lovsey Co., Pittsburgh.

it is raised by a 25,000-gallon per hour centrifugal pump against 70-foot head, into the quenching tank. The motor is float controlled from the water level in the tank. Water lost by evaporation amounts to about 15 per cent and a similar quantity from the service water line is admitted into the clear well by a flat controlled valve. The feed line to the sprays is 12 inches diameter and is equipped with a quick-opening valve operated from the quenching locomotive cab. To avoid excessive moisture in the coke after quenching has been completed a 12-inch drain valve in the line feeding the sprinklers automatically is opened on closure of the service valve, which quickly discharges all water remaining in the lines and sprinkler pipes back into the clear well. By this arrangement there is no after drip from the sprinklers to be absorbed by the coke, thus allowing the car to remain in the quenching station until drainage from the coke is completed.

Coke Breakage Is Minimized

After quenching, the coke is discharged onto a coke wharf 64 feet 5 inches long, inclined at an angle of 26 degrees to the horizontal and covered with special cast-iron wearing plates. These plates are laid with their edges flush instead of overlapping to minimize coke breakage and for the same reason the usual type of rotary feeders are omitted. The coke after being spot quenched, where any fire remains, and cooled, is discharged direct onto the coke conveyor belt, the flow from the wharf being regulated by cut-off gates composed of ⅞-inch square finger bars with handles extended within reach from the operator's platform along the length of the coke wharf.

The wharf conveyor belt, 36 inches wide and 97¼ feet long from center to center of pulleys, discharges onto a 30-inch inclined conveyor 237-foot centers. This delivers the coke onto a 4-foot wide revolving grizzly screen with 11-inch diameter disks spaced to give an average of 1¼-inch openings. The furnace coke, which passes over the grizzly screen, is delivered by a curved chute at an angle of 49 degrees onto a 36-inch boom conveyor 96-foot centers. A portion of this conveyor 57 feet long is carried on a boom structure hinged at one end and raised or lowered at the delivery end by a 3-ton electric hoist, the weight being partially balanced by counterweights attached to a wire cable passing over sheaves and fastening to a structural bail at the boom end. This permits the discharge end of the boom to be lowered into the cars so the coke may be loaded without excessive dropping and breakage; a motor-driven drum type car haul moves the cars forward as the loading progresses.

Small coke passing through the rotary grizzly travels over a high-speed balanced shaking screen, having a screening surface 4 x 6 feet with ¾-inch round openings. The breeze passes through this screen and is delivered by a chute to cars on a track underneath the screening station paralleling the furnace coke track. The coke passing over the shaking screen falls into an 18-inch conveyor belt and is discharged into a chute arranged to deliver it onto the boom conveyor belt for mixing with the furnace coke or as nut coke to cars on a track alongside the screening station, ready for shipment.

Screening Station Is Enclosed

Screening equipment and also the head drive for the inclined coke conveyor is housed in a building 30 x 34 feet with an extension, 17 x 87½ feet, over the furnace coke track and loading boom. At the far end of this building is located the motor-driven car haul. The control for the conveyors, loading boom hoist and car haul are centralized over the loading point of the cars under the attention of one operator. For both the coal and coke handling plants all conveyors below yard level are carried on reinforced concrete beams and slab construction with reinforced concrete posts and above yard level by steel galleries roofed and sheeted with corrugated galvanized steel. The decking under the conveyors is made of steel plates while the floor alongside the conveyors on both sides is made of reinforced concrete slab construction; all chutes and hoppers subject to excessive wear are composed of or

(*Continued on Page* 991)

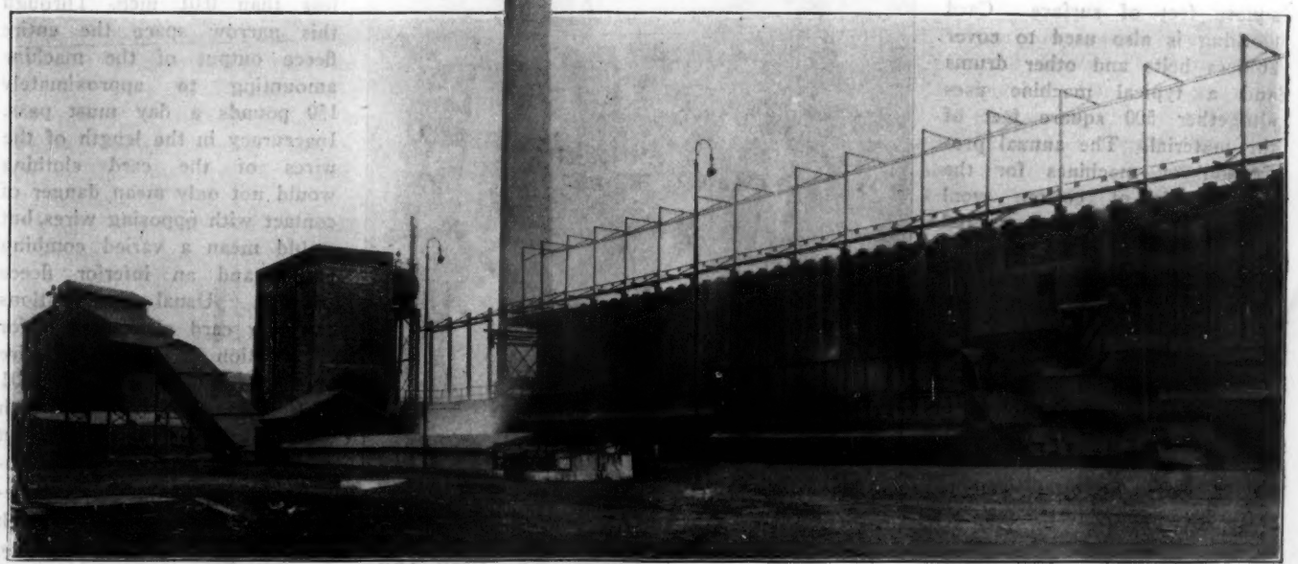


FIG. 4—COKE SIDE OF BATTERY WITH QUENCHING CAR AND ELECTRIC LOCOMOTIVE IN THE FOREGROUND. COKE WHARF IS SHOWN IN MIDDLE WITH QUENCHING STATION AND COKE SCREENING AND LOADING STATION AT THE LEFT

Large Uses of Steel In Small Ways

STEEL to an appreciable quantity is consumed in the manufacture of cloth. In addition to the wear of machine parts the actual rubbing of the cotton or wool fibers through the combing action of tiny steel bristles accounts for many tons of steel during a year.

One of the principal operations in the manufacture of cloth is known as carding. Carding machines consist in part of drums around which are wrapped what is called card clothing. This card clothing is in effect a mat composed of upright small wires many thousands to the square inch, held in place by a canvas or other firm backing material. One of the largest manfacturers of carding machines uses a card clothing which has 86,400 wire bristles per square inch. These wires are very small diameter, are cold drawn and of a special analysis of steel similar to spring steel. The card clothing is usually made up in narrow strips as shown in the illustration. These strips vary from 1 to 3 inches wide and are wound onto the large drums of the carding machines. The drums themselves vary considerably in dimension but a usual type of machine has a drum four feet in diameter and four feet long. Such a drum has 44 square feet of surface. Card clothing is also used to cover endless belts and other drums and a typical machine uses altogether 500 square feet of the material. The annual production of machines for the manufacture of cotton, wool and worsted cloth for a normal year is close to 5500 which means on the assumption of 500 square feet to a machine a total of 2,760,000 square feet of clothing a year for the new machines. Card clothing to replace worn out clothing amounts to about 10 per cent, or 276,000 square feet, bringing the approximate total used to 3,000,000 square feet. One of the leading manufacturers of card clothing gives the approximate weight of steel wire per square foot as one pound, and thus it is seen that the annual consumption of card wire is in excess of 1500 tons.

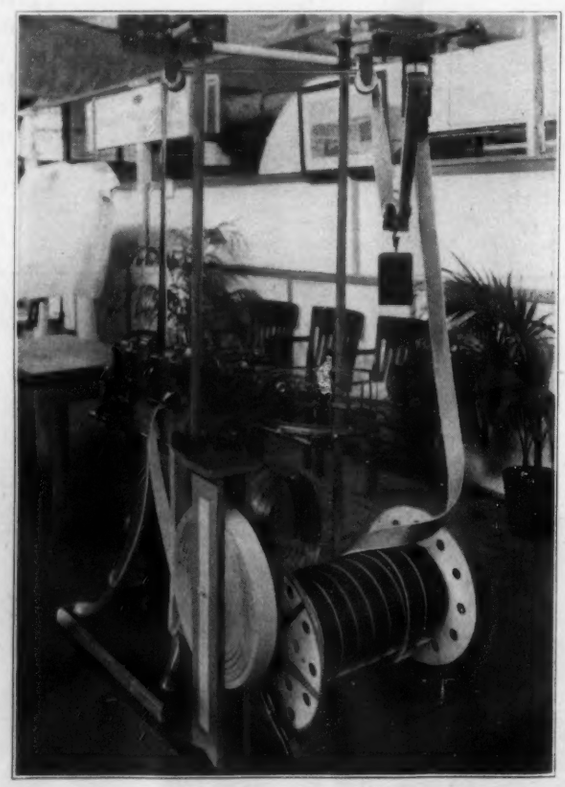
Card Clothing

THIS is the ninth of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared Nov. 22. Other articles were "Pins," Dec. 6; "Pens," Dec. 20; "Cotton Ties," Jan. 17; "Steel Wool," Jan. 31; "Toys," Feb. 14; "License Plates," Feb. 28; "Spinning Rings and Travelers," March 13, and "Hypodermic Needles," March 27.

Card clothing is produced on highly ingenious automatic machines, one of which is shown in the illustration. The canvas belt used as a backing material is carried on a reel and fed in from the front of the machine. The steel card wire in coils is placed on a reel near the back of the machine. This wire is fed through rollers into cam operated dies which with almost unbelievable rapidity cut and bend the wire into small staples which are forced through the canvas backing and again caught, bent and trimmed to an exact length before the strip leaves the machine. The completed strip is wound on a suitable spool or container. It usually is made up in single lengths sufficient to cover a full drum, avoiding necessity for piecing.

The operation of the machine is automatic except for replacing the coils of raw material and the spools of completed card clothing strip.

Some idea of the accuracy demanded in card clothing by textile machine manufacturers is readily seen from the general design of carding machines. In the Saco-Lowell machine an endless chain made up of flat steel strips each covered with card clothing passes over the curved surface of a 4-foot drum. The drum and the chain both covered with card clothing have different speeds and the two are set so that the free space between the tips of the opposing tiny wire bristles is less than 0.01 inch. Through this narrow space the entire fleece output of the machine amounting to approximately 150 pounds a day must pass. Inaccuracy in the length of the wires of the card clothing would not only mean danger of contact with opposing wires, but would mean a varied combing action and an inferior fleece product. Usual specifications covering card clothing call for a variation in length of wire bristle of not more than 0.001 inch. Another feature which adds to the demand placed on the small machines which manufacture card clothing is the peculiar curve or bend which must be given each tiny bristle. This bend plays an important part in the combing action and



STRIPS OF CARD CLOTHING CONTAINING 86,400 TINY WIRE BRISTLES PER SQUARE INCH ARE AUTOMATICALLY AND CONTINUOUSLY PRODUCED ON HIGHLY INGENIOUS MACHINES

varies with different manufacturers. Most card wire has a circular cross section, but some designers have felt that other forms were best suited to their methods, and, therefore, it is not uncommon to find triangular wire, moon shaped wire, and other odd forms used in the manufacture of card clothing.

Lights 37 New By-Product Coke Ovens

(*Continued from Page* 989)

lined with hard cast-iron plates or manganese steel.

All troughing and return idlers for belt conveyors are equipped with roller bearings designed for grease lubication which has to be replenished only once every 4 to 6 months, thereby dispensing with labor for oiling. All conveyor head drives are of heavy design with gearing enclosed in oil-tight cast-gear cases; high-speed bearings ring oiled, with flexible couplings, connecting motor armature shafts to the pinion shafts; and, with alignment couplings between the gear drive and the driven element. The control for the various conveyor drives is electrically interlocked to start in sequence which will prevent overloading or spillage at any one point by starting the succeeding conveyor first. All conveyors of a system can be stopped simultaneously from push button stations.

The plant has exceeded the guarantee and yields expected prior to its building. It was built to supply coke to the blast furnace to yield results equal to or better than obtained from beehive coke from coal from the mines of the company, and while the blast furnace and coke plant departments have had a relatively short time in which to coordinate their practices, the results so far have proven that a good coke can be made from the Klondike basin coal and that blast furnace results may be expected from this coke which will eliminate the necessity for using low-volatile coal.

Results obtained from the blast furnace with this coke, which was operated last August on straight ore and in December with scrap added to increase hot metal production, is shown in Table I. The stack is lined for 600 tons output per 24 hours. In October the open-hearth plant made what is probably a world's record tonnage for a seven-furnace plant, producing 50,431 tons of ingots, using 38 per cent hot metal from the blast furnace and the balance light scrap and crops from the blooming and finishing mills.

The concluding installment of this article which will appear in an early issue of IRON TRADE REVIEW, will describe the by-product recovery department of the new plant.

Tungsten Minerals Are Sought Widely

Largely because of the extensive use of tungsten in the manufacture of high speed steel, the search for tungsten minerals has been stimulated throughout the world, according to the bureau of mines which has just issued a bulletin on this subject. The principal tungsten minerals are scheelite, ferberite, wolframite and hubnerite. Scheelite is a tungstate of calcium with a specific gravity of 5.9 to 6.1. Ferberite is a dark, grayish black mineral with a specific gravity of 6.8. It consists principally of tungstate of iron but may contain small traces of manganese. Wolframite and hubnerite are tungstates of iron and manganese. The percentage of manganese practically determines the mineral, although there are gradations that make classification difficult under either head. Typical hubnerite carries about 20 per cent manganous oxide and typical wolframite 5 to 7 per cent.

Scheelite is found mainly in the Atolia district of California; the largest deposits of ferberite in the United States are in Boulder county, Colo. Small deposits of hubnerite, wolframite and ferberite are scattered through New Mexico, Arizona, Nevada, and South Dakota. Tungsten deposits occur also in Burma, China, Queensland, Portugal, New South Wales, Argentina and Bolivia. In China ferberite has been found in placer deposits associated with small quantities of tin.

Apart from the ores, the products that have to be analyzed are metallic tungsten and ferrotungsten, intermediate products, and the various tungsten steels. Metallic tungsten is obtained by the reduction of the oxide and may contain different tungsten oxides due to incomplete reduction, as well as other impurities. Ferrotungsten carries from 50 to 80 per cent metallic tungsten; high speed steels contain as much as 16 or 17 per cent metallic tungsten; self hardening steels, or those requiring no tempering after forging, contain as little as 2½ or 3 per cent with 6 or 7 per cent chromium. Extremely pure tungsten is used in incandescent lamp filaments after repeated swaging and heating has made the metal ductile and fibrous.

Making Iron in Electric Reduction Furnace

(*Concluded from Page* 983)

that it is neither necessary nor desirable to locate such a plant out of contact with the commercial lines of intercourse.

Many attempts have been made in the western states to reduce iron ores electrically. At many periods of the last decade opportunities have been offered to initiate this industry on a solid, and businesslike foundation, but each time some factor interfered with the continuation of the work. Freight rates have favored the western iron ore smelter. The transportation of pig iron from Colorado, Alabama, New York, Pennsylvania, and Illinois has cost the western buyer one-fourth to one-third more than the furnace price. Via the Panama canal and New York state barge canal, the carrying charges on a ton of pig iron from Buffalo to San Francisco, were approximately $18. This brought the price at San Francisco to about $43 a ton in 1922.

At this figure, electric reduction furnace iron, could be produced from 1913 to 1922 on the Pacific coast from Vancouver to Los Angeles, at a profit, but industrially the Pacific coast was not ready for such an enterprise. The business of the coast in iron and steel is in the Orient, and this market is not developed to the point where it will stand "expensive experimenting." Anything attempted, without respect to known laws, is bound to end in a stressed condition, and this is the simple reason why no electric iron reduction plants now are in operation on the Pacific coast.

At the present time the Pacific coast has available steelmaking capacity in electric and open-hearth furnaces of approximately 500,000 tons annually. Most of this is produced from steel scrap. Steel scrap each year is becoming scarcer and more costly, so that some new metal must be supplied each year to augment the loss in scrap available. This must come from ore reduction. A blast furnace now is under construction in Utah, and another is contemplated for Los Angeles. These furnaces probably will be operated for only part of the time on account of their tonnage, and the absorbing market for their tonnage. An electric reduction furnace situated in the northwest, or near Oakland, Cal. would be enabled to operate full 300 days per year, also satisfy a portion of the pig iron requirements, and operate at a profit, when iron costs $43 per ton at San Francisco.

Recent power developments have made available enormous quantities of electrical energy in the northwest, but no district will ever realize cheap power, regardless of the capacity of generation and distribution, unless it can consume large amounts of energy. It is the consumption of energy that lowers the rate and not the capacity for its generation.

French Establish Foundry School

Comprehensive Plan Launched To Provide Thorough Preparation for Foundry Engineers and Managers—Degree of Engineer in Foundry Practice Granted—School Is Linked with Apprenticeship System

BY VINCENT DELPORT
European Correspondent of IRON TRADE REVIEW

WHAT is said to be the first school established in France for the purpose of training engineers specially for foundry management was opened in Paris on Jan. 7, 1924. It is called the *Ecole Superieure de Fonderie* and is located in the buildings of the *Ecole Nationale des Arts et Metiers* where the International Foundry congress was held in September, 1923. The creation of this school marks the culmination of a campaign which has been carried on for three years by the *Syndicat General des Fondeurs de France* for the purpose of increasing the supply of French foundry specialists from the skilled molders up to engineers and managers. This work has been carried on with the aid and approval of the French government, and the *Association Technique de Fonderie de France* has also given its support to the enterprise.

The idea of a special school for foundry engineers was originally developed by E. V. Ronceray, chairman of the French committee for training and apprenticeship, in a paper which was read at the foundrymen's congress of Liege, Belgium, in September, 1921. This paper was entitled, "Apprenticeship and Professional Teaching in the Foundry Practice." The question was taken up in France by the Syndicat General des Fondeurs de France whose president is G. Dufour, a foundry proprietor. The government gave its support to the scheme through the channel of the department of education, and M. Labbe director of technical education was delegated to keep in touch with the Syndicat des Fondeurs. It was agreed that if the program of the Syndicat were accepted, the ministry would share in the financing of the enterprise to the extent of one-half the cost, the other half of the funds being furnished by the Foundrymen's association; furthermore, the necessary lecture rooms, the foundry, and the pattern shop of the *Ecole Nationale des Arts et Metiers* of Paris were to be put at the disposal of the new institution. On July 30, 1923, the scheme was definitely laid out by the *Syndicat General des Fondeurs* and communicated to the representative of the government. At the beginning of October, the names of the proposed directors of the future school were drawn up for approval, seven members of the board being designated by the *Syndicat des Fondeurs* and six by the *Ministere de l'Instruction Publique*, and on Oct. 23, the decree was signed authorizing the opening of the school with the president of the *Syndicat General des Fondeurs* as chairman of the board ex officio. The administration of the school is delegated to the director of the *Ecole Nationale des Arts et Metiers* of Paris, M. Corre.

Thorough Instruction Planned

The number of students is limited at present to 50; they are admitted after a competitive examination of all the candidates. Foreigners and special students can be admitted providing they do not exceed 20 in number. At the opening of the school there were 18 students, including one foreigner and one special student. Regular students pay a fee of 500 francs (about $25) for their year's studies; foreign students and special students pay 1000 francs (about $50). The working capital of the *Ecole Superieure de Fonderie*, which is organized as a corporation, is 80,000 francs furnished by the government and by the Syndicat General des Fondeurs, each sharing equally. The course of study is comprehensive and in fact represents the last stage in the training of the foundry engineer or manager following his apprenticeship.

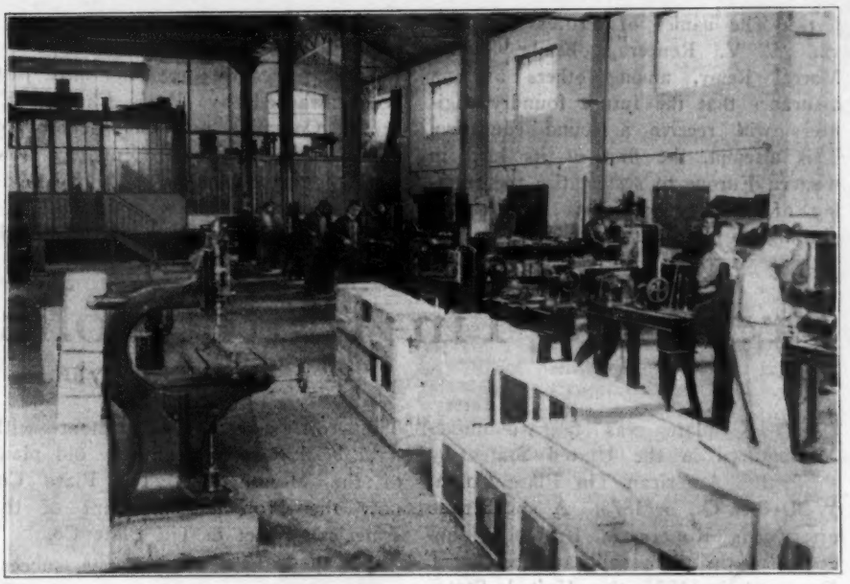
IN ADDITION TO THE CUPOLA THE SCHOOL FOUNDRY HAS OTHER TYPES OF MELTING FURNACE

The general method which is followed can be summarized as follows: Apprentices are taken in certain foundries, usually between the ages of 13 and 16; during the first year they are given elementary notions on general subjects during one or two evenings a week; this constitutes the general preparatory course. During the next two years, the apprentices and also grown up workmen who are willing to do so, follow a course of professional training. This course, which constitutes the first degree, is given in the various districts of the country wherever a number of foundries are grouped together. This preliminary course consists of lectures delivered in the evenings according to a program laid down by the *Syndicat General des Fondeurs*. At the end of this period, the apprentice who has at the same time been trained practically in the foundry, has become a qualified workman. If he wishes to improve himself, he then follows for one year a higher course which constitutes the second degree in his training as a specialist. This higher course is also given in each separate district and generally takes the form of Sunday lectures and exercises. Thus the student becomes familiar with the elements of mathematics, physics, chemistry, drawing, etc. This complete system of instruction is not yet fully developed but the program is laid out and efforts are being made toward its realization.

The workman has now been trained for three or four years. He may be employed in one plant or another. In fact at any time he may choose not to pursue his studies and to remain in the ranks. But should he decide to reach the last stage and apply for admission to the *Ecole Superieure de Fonderie*, he will have to follow a final preparatory course for one more year. This course is given at the various local professional schools, twice a week in the evenings, and prepares the student for the examination which he will have to pass in order to be admitted to the superior

foundry school. This examination consists of both theoretical and practical tests.

Candidates for the *Ecole Superieure de Fonderie* come from two sources: The foundries themselves as just described, and the leading engineering schools. Each of these sources may furnish as much as 50 per cent of the number of regular students. Until further notice candidates coming from certain recognized engineering schools must have had one year's actual practice in a foundry; then they submit to the practical examination and are exempted from the theoretical part. The other candidates only submit to the theoretical tests. The object of the examination is not only to eliminate candidates in excess of the fixed number, but also to be sure they have sufficient knowledge of mathematics, physics, chemistry, drawing, etc., on the one hand, and of foundry practice on the other to enable them to follow the course with profit. The course lasts one year, from Oct. 1 to July 14, half a day being devoted to the lectures and exercises, the other half to the student's personal studies.



THE COURSE INCLUDES THOROUGH PRACTICAL TRAINING IN PATTERN-MAKING AND THE ECONOMICS OF PATTERN CONSTRUCTION

Lectures and Shop Work

The course of the study consists of 160 lectures on a variety of subjects, practical and theoretical, pertaining to foundry practice, and 70 practical exercises comprising laboratory work and actual practice in the foundry and pattern shop. During each lecture a certain amount of time is devoted to discussion during which the students can obtain explanations on points which have not been well understood. They also are quizzed by the professors on the subject of the lesson. Each week the students visit a foundry plant, and once a month they report on these visits. At the end of the year's work, the regular students choose a subject on which they write an essay or thesis. They are then examined on the whole course, but principally on the subject they have chosen for their thesis. This examination serves to classify the students as they come out of the school. Their answers to the questions put to them during the lectures and their reports on plant visitations also serve to classify them. Those who have passed all the various tests to the satisfaction of the jury have a right to the title of Engineer E. S. F. A certificate is also delivered to the special students who have followed the course regularly.

The lectures and practical exercises are prepared and delivered by practical foundrymen and recognized authorities who are specialists in the various sub-

LARGE OVENS MAKE POSSIBLE COMPARATIVE RESEARCHES IN GREEN AND DRY SAND MOLDING

jects. The names of Professor Portevin, E. V. Ronceray, Emile Ramas, Marcel Remy, among others are an assurance that the future foundry engineers will receive a sound education. This attempt, the first of its kind in western Europe to systematize the training of foundry specialists is now beginning to give results which are encouraging for the future.

Three prizes totaling $150 have just been awarded by Prof. Charles E. Lucke, Columbia university schools of mines, engineering and chemistry, New York, to mechanical and chemical engineering students for the best reports covering a course dealing with furnaces and heat transfer apparatus. The National Research council has taken up the question of heat transmission and its investigation committee urges the formation of a working organization to encourage and coordinate national activity and to foster research. An expenditure of $10,000 bibliography.

Preserve Tin Plate Rolls by Scouring

BY A. B. DAVENPORT, JR.

TIN plate was first manufactured in the United States by the American Tin Plate Co. at Wellsville, O., in 1873. A short time afterwards Rogers & Burchfield operated a tin plate mill at Leechburg, Pa., and in 1875 the United States Iron & Tin Plate Co. made tin plate at Demmler, Pa. Owing to the low duty on the imported product, domestic tin plate ceased to be made at the foregoing three plants in 1878. No further attempts were made to manufacture this product until the year of 1890, after the passage of the McKinley tariff bill, when the duty on imported tin plate was doubled. Since that time steady progress has been made in the industry.

Sheet steel plate was successfully produced in the United States many years before the manufacture of domestic tin plate was attempted. In the early development of the industry it was found necessary to scour the rolls at certain intervals to keep them free from the imperfections produced by the scale during the rolling process. To remove these blemishes it was common practice for many years to scour the rolls by application of emery mixed with oil, using a wood block which previously had been shaped to fit the convex surface of the top of the bottom roll and the bottom of the top roll, near the point where the rolls came in contact. This practice was carried on for many years and it was not until about 1900 that any effort was made to scour rolls by other means.

The first attempt to scour rolls by a different method, as far as the writer can ascertain, was tried out by the application of a bath brick, or bristol brick, as it sometimes is called. This is an artificial product formed of calcareous earth and is used commonly in England for scouring various metals. Bath brick is an English product made from silt found at low tide on the shores of the River Parret, principally near Somersetshire.

The author is a sales engineer associated with the Abrasive Co., Philadelphia.

The roll scouring experiment with bath brick was made at the old plant of the Monongahela Tin Plate Co. now the Monongahela plant of the American Sheet & Tin Plate Co.

The bath brick was not a success as its abrasive qualities were insufficient. Cast and chilled iron next were tried, but neither material possessed sufficient abrasive qualities. During further experimentation a brick was made from a discarded emery wheel and this material proved successful. Later special emery bricks were made in various sizes and shapes. With the introduction of carbide of silicon, bricks of this material were tested and were found to be efficient. Few changes have been made in the carbide of silicon brick since its introduction, aside from slight modifications in shape, grain size and hardness.

Many methods have been employed in the application of the bricks. In some instances the bricks are brought in contact with the upper and lower rolls at the same time. A number of operators prefer one brick that is made to fit the two rolls, while others favor two bricks held in a special holder, bringing one brick in contact with each roll. Another means adopted is to scour the top and bottom rolls independently by applying the brick on the rolls, holding them in a holder placed on a long wooden lever, using a fulcrum to get the desired pressure. The results obtained vary considerably. Some users state that the duplex method of scouring the top and bottom rolls at the same time gives better results and effects an economy in the life of the bricks. Others claim that this application is incorrect, because the condition of the two rolls is not always the same. They maintain that by applying the bricks to the two rolls at the same time, unnecessary scouring is performed on one roll, the condition of which does not warrant this work, possibly doing harm.

During the latter part of 1900 attempts were made to scour rolls mechanically, without interfering with their operation, and in 1918 an appliance was designed to accomplish the desired results. This device has been used up to the present time with only slight modifications and improvements in construction.

The roll scouring device consists of a long screw reaching across the front of the roll from one housing to the other and supported at each end by journals so placed that the center line of the screw parallels the center line of the roll. This screw carries a nut which accommodates a holder in which the brick is fastened. The screw is rotated by a pulley located on one end. The reversing motion of the screw is accomplished by a trip dog which actuates a reversing clutch at each end of the screw. The brick is kept in contact with the roll with an even pressure, while wear is taken up by means of a thrust bar and spring. Two of these appliances are necessary for each set of two rolls, one on the front at the center line of the top roll, the other at the front on the center line of the bottom roll. The device brings only sufficient pressure of the brick against the rolls to scour them. This eliminates excessive heat which would cause the brick to fill, reducing its abrasive qualities. By using the appliance frequently the rolls are not permitted to get in bad shape. Neglected rolls, on the other hand, cannot be repaired without resorting to a comparatively expensive grinding operation. Thus frequent scouring is recommended to avoid harm to the rolls.

One of these machines has been in operation for several years, during which time others have been built and added to the equipment of one of the oldest mills in the country. Those in charge of the rolls state that the installation of the machines has effected a decided economy, due to the increase in life of the rolls and the output of a better product. In looking after 12 mills in the plant in question one millwright and a helper keep the rolls in good condition at all times.

Trade Body's "Fishing" Barred

Federal Commission Receives Setback Through Supreme Court's Decision in Tobacco Company Cases—Decision Is Strikingly Similar to Lower Court's Ruling in Claire Furnace Litigation

WASHINGTON, April 8.—An atmosphere of uncertainty has beset some of the plans and activities of the federal trade commission as a result of the United States Supreme Court decision in the tobacco company cases which would put a stop to the directing of "fishing expeditions" by the commission into private papers on the possibility that they may disclose evidence of crime. This decision of the Supreme Court may have far-reaching effects, and great interest is expressed here as to whether the decision in the Claire Furnace case may be along similar lines. A decision in this case is expected to be handed down by the court in a short time.

The Claire Furnace Co. and a number of other iron and steel and coke companies engaged in related lines of industry obtained an injunction in the District of Columbia supreme court two years ago, restraining the commission from enforcing its orders for monthly costs of production and other figures. The appellate court sustained the district supreme court and Justice Van Orsdel delivered an opinion which is strikingly similar in parts to the opinion of Associate Justice Oliver Wendell Holmes, of the Supreme Court, in the tobacco cases.

In the lower court Justice Van Orsdel compares the commission's investigations into production costs and papers as "a news-gathering expedition, in the hope of securing something of public interest for publication." Justice Holmes of the Supreme Court compares the federal trade commission's quest for tobacco information with a "fishing expedition."

A weakness in the case of the commission against the Claire Furnace Co. and the other steel companies has been that the concerns the commission would investigate have been engaged in manufacturing, and not commerce. This also has proved a weakness in the tobacco cases. It is in the matters of interstate commerce that the commission has jurisdiction, for the courts have held in another case that "the making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterward shipped or used in interstate commerce make their production a part thereof. Over interstate transportation or its incidents the regulatory power of congress is ample, but the production of articles, intended for interstate commerce, is a matter of local regulation."

The decision of the tobacco cases declared that the mere facts of carrying on a commerce not confined within state lines, and of being organized as a corporation, do not make men's affairs public. It says further:

"Anyone who respects the spirit as well as the letter of the fourth amendment would be loath to believe that congress intended to authorize one of its subordinate agencies to sweep all our traditions into the fire and to direct fishing expeditions into private papers on the possibility that they may disclose evidence of crime.

"The mere facts of carrying on a commerce not confined within state lines and of being organized as a corporation do not make men's affairs public, as those of a railroad company now may be.

"The interruption of business, the possible revelation of trade secrets, and the expense that would result from compliance with the commission's wholesale demand are the least considerations. It is contrary to the first principles of justice to allow a search through all the respondents' records, relevant or irrelevant, in the hope that something will turn up. The unwillingness of this court to sustain such a claim is shown in previous cases.

"We assume for present purposes that even some part of the presumably large mass of papers relating only to intrastate business may be so connected with charges of unfair competition in interstate matters as to be relevant. But that possibility does not warrant a demand for the whole. For all that appears, the corporations would have been willing to produce such papers as they conceived to be relevant to the matter in hand.

"We have considered this case on the general claim of authority put forward by the commission. The arguments for the government attach some force to the investigations and proceedings upon which the commission had entered. The investigations and complaints seem to have been only on hearsay or suspicion, but even if they were induced by substantial evidence under oath the rudimentary principles of justice that we have laid down would apply. We cannot attribute to congress an intent to defy the fourth amendment or even to come so near to doing so as to raise a serious question of constitutional law."

Predict Car Loading Gain Over 1923

BY W. J. L. BANHAM

PREDICTIONS as to the future course of industry are always interesting to the business man. Any facts or figures which are specific enough to help him project his business plans for a month or six months or a year are invaluable. The service of one trade analysis is unique. This is the review of industry made voluntarily by the members of the Atlantic states shippers advisory board and considered by many business leaders to be the closest checkup of the course of trade now obtainable.

Every large shipper and receiver of freight in the middle Atlantic states is represented on this board. Organized in January, 1924, to adjust informally transportation difficulties with the railways the board now represents several thousand individual industrial concerns. In other words practically every shipper of railway freight in the five states in this territory, New York, eastern Pennsylvania, New Jersey, Delaware and Maryland, has representation on the board. There are at present eight of these boards throughout the country covering practically every state.

Executives who attended the February and March meetings of the Atlantic states board heard reports from some 51 committees covering every industry within its district. Each commodity chairman by a personal canvass of the individual units in his industry, made an estimate of his car demands for a period of 30, 60 or 90 days, based on present and future orders. It is easy to see that through this combined estimate of car needs the car service division of the American Railway association will be able to allocate freight cars more intelligently in the future and thus avoid traffic congestion and delays.

After a survey of all reports submitted at the Philadelphia meeting of the board, March 13, we predict that

The author is general chairman, Atlantic States Shippers Advisory board, and general traffic manager, Otis Elevator Co.

goods transported during the first six months of 1924 will show an increase of 10 to 15 per cent, as compared with the same period of 1923.

From a study of the situation which has been made by the individual shippers, it appears that for the next two months the automotive parts and accessory manufacturers will require from 10 to 15 per cent more cars than they used last year.

A report from Frank A. Bedford, division traffic manager American Bridge Co., Philadelphia, respecting conditions in his territory says:

"The car requirements for the outbound shipments of iron and steel for the next 60 days will be relatively the same as the requirements for 1923. A good car supply was indicated while the efficiency of the movement was reported as excellent. The cars made empty on inbound business are being applied to outbound loading, so that practically all inbound cars are used for outbound shipments, including coal cars. Steel interests are making continuous efforts to bring about heavier loading and are showing a percentage increase each year."

Societies News

TO ENABLE engineers to take a more active part in national and international affairs, the Federated American Engineering societies has reorganized using the government of the United States as a model. Henceforth the organization will be known as the American Engineering council. The administrative and legislative body, formerly called the American Engineering council and now designated as the assembly, will meet annually in Washington, the meeting to be in the nature of a conclave of engineers and allied technical and scientific interests. The executive board now is to be known as the administrative board and the committee on precedure becomes the executive committee. The constituent societies correspond to the states in the national government. Thus the assembly is analogous to congress and the administrative board will represent the President and cabinet. Ex-governor James Hartness of Vermont, president of the council, in announcing the reorganization plan, stated that the first meeting of the administrative board will be held in Philadelphia, May 23 and 24.

* * *

Machine Tool Builders to Meet

The semiannual convention of the National Machine Tool Builders association will be held at the Hotel Statler, Buffalo, late in May, according to E. F. DuBrul, general manager of the association. Preliminary to the convention, but not as a part of it, a joint conference of machine tool builders and dealers is being arranged by a committee.

* * *

Bulletin Shows Space Sold

The National Association of Purchasing Agents has just issued another bulletin and floor plan showing the space yet available for the exhibition to be held in connection with the ninth annual convention of the organization at Mechanics hall, Boston, May 20-23. Exhibitors who have already engaged space are listed in the phamphlet.

* * *

To Announce Program Soon

Details of the program for the eighth annual meeting of the American Gear Manufacturers' association to be held at the Lafayette hotel, Buffalo, April 28-30, will be announced soon. One of the principal speakers will be J. C. McQuiston, manager publicity department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., who will discuss "Advertising as an Investment to the Gear Manufacturer."

* * *

Conducts British Foundry Show

An international Foundry trades exhibition, sponsored by the Birmingham chamber of commerce, will be conducted at Birmingham, England, June 19-28. At the end of March about 40 applications for space had been received. The exhibition will be held in Bingley hall as was the 1922 show. Lord Weir, head of G. & J. Weir, Ltd., Cathcart, Glasgow, again will serve as president of the exhibition, and the patron bodies will include the Institute of British Foundrymen, British Cast Iron Research association and other technical organizations. A series of lectures on foundry subjects will be given during the exhibition and a number of competitions are being arranged to promote the arts of molding and pattern making. The exhibition is in charge of Charles Stanley, general manager of the exhibition department of the Birmingham chamber of commerce.

* * *

To Discuss Military Problems

Dwight F. Davis, assistant secretary of war, will address a special meeting of the Associated Engineering Societies of Pittsburgh, at the William Penn hotel, Pittsburgh, on April 15. The subject of his address will be "Industrial Mobilization." As an additional feature, moving pictures will be shown of battleship bombing by airplane, maneuvering and firing of artillery equipped with tractor mounts, and developments of chemical warfare service.

* * *

Will Discuss Refractories

One of the features of the forty-fifth meeting of the American Electrochemical society at Philadelphia, April 24-26 will be a round table discussion on "Refractories for Electric Furnaces." This meeting will be conducted during luncheon on Thursday, the second day of the convention, according to the official program which has just been announced. A number of inspection trips have been arranged for Thursday afternoon, among which will be visits to the Ajax Wyatt Co., Henry Disston & Sons, Dodge Steel Castings Co. and the Brown Instrument Co.

Convention Calendar

April 23-24—National Metal Trades association. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas building, Chicago, is secretary.

April 24-26—American Electrochemical society. Spring meeting, Bellevue-Stratford hotel, Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

April 28-30—American Gear Manufacturers' association. Spring meeting, Lafayette hotel, Buffalo. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

April 30-May 2—Society of Industrial Engineers—Annual convention at Buffalo. George C. Dent, 608 South Dearborn street, Chicago, is secretary.

May 5-10—Sheet Steel Executives. Second annual convention under auspices of National Association of Sheet and Tin Plate Manufacturers, Hotel Greenbrier, White Sulphur Springs, W. Va. W. S. Horner, 1832 Oliver building, Pittsburgh, is chairman.

May 8-9—British Iron and Steel institute. Annual meeting at the Institution of Civil Engineers, London. G. C. Lloyd, 28 Victoria street, London, is secretary.

May 19-21—Southern Supply and Machinery Dealers' association, National Supply and Machinery Dealers' association, and American Supply and Machinery Manufacturers' association—Triple convention at Hotel Cleveland, Cleveland. Alvin M. Smith, Smith-Courtney Co., Richmond, Va.; T. James Fernley, 505 Arch street, Philadelphia; and F. D. Mitchell, 1819 Broadway, New York, are the secretaries respectively.

May 20-23—National Association of Purchasing Agents. Annual convention, Mechanics Hall, Boston. W. L. Chandler, 19 Park place, New York, is secretary.

May 22-23—American Society for Steel Treating. Spring sectional meeting, LeClaire hotel, Moline, Ill. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

May 22-23—National Pipe and Supply association. Annual meeting, Hotel Cleveland. George L. McIlvane, 909 Oliver building, Pittsburgh, is secretary.

May 26-29—American Society of Mechanical Engineers—Spring meeting Hotel Cleveland, Cleveland. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

WADE H. Oldham, recently appointed general superintendent of the Fairfield steel works of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., formerly was superintendent of the Ensley blast furnaces for that company.

George H. Millar, former superintendent of the Fairfield plant now is assistant to Mr. Oldhan while R. H. Ledbetter has succeeded Mr. Oldham at Ensley. Mr. Ledbetter formerly was connected with the Bessemer plant. The changes were effective as of April 1.

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Judge E. H. Gary, chairman of the United States Steel Corp., now is enroute from Rio de Janerio and is expected to arrive in the United States about April 15.

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Archil Loyer recently was appointed district sales manager at Cleveland for The Fitzsimons Co., Youngstown, O., producer of cold-finished steel products. He will be assisted by John Keleher.

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Eugene Rich, engineer, formerly with a construction company at Indianapolis Ind., is now connected with the Bourne-Fuller Co., and is working out of the company's Cincinnati office on reinforced concrete projects.

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E. R. Perkins of Tarentum, Pa., has been appointed general manager of the Allegheny Steel Co., Brackenridge, Pa., succeeding V. B. Browne who has been appointed assistant to the president, Harry E. Sheldon.

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James A. Long recently was appointed general manager of the Woodward Iron Co. Woodward, Ala., succeeding A. J. Boynton, who has become connected with H. A. Brassert Inc., Chicago.

* * *

R. E. J. Summers, chief engineer of the H. K. Ferguson Co., Cleveland engineer and builder, is returning to Japan where he will spend several months in supervising engineering projects which the Ferguson company is handling in that country.

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Dan C. Swander, formerly general manager of the Perfection spring and Eaton bumper divisions of the Standard Parts Co., Cleveland, has resigned as vice president of the Eaton Axle & Spring Co., that city.

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C. A. Wills, general foreman of the Wm. B. Pollock Co., Youngstown, blast furnace builder, has been named general superintendent to fill the vacancy caused by the death of John Kirby. Mr. Wills has been in the employ of the Pollock company for many years.

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Robert S. Alter, vice president and foreign manager of the American Tool Works, Cincinnati, has been elected a director of the American-Russian chamber of commerce, with headquarters in New York and Moscow. The appointment of Mr. Alter is the result of his extensive activities in developing trade with Russia.

* * *

J. W. Bell, who was construction engineer for Perin & Marshall, New York, during the erection of the new mill of Tinplate Co. of India, has entered into partnership with W. J. Douglas under the name of Douglas & Bell, at 200 Abbey House, Victoria street, London, S. W. I. A general iron and steel engineering business will be conducted.

* * *

W. Y. Stroh, president Stroh Steel-Hardening Process Co., Pittsburgh, who is visiting Great Britain on business, has established temporary headquarters at Ormonde House, St. James street, London, S. W. I. Mr. Stroh is investigating the possibilities of the steel casting industry in Great Britain, where he expects to remain two or three months.

* * *

T. R. Harrington, recently placed in charge of the research department of the Brown Instrument Co., Philadelphia, manufacturer of pyrometers, thermometers and other indicating and recording instruments, formerly was associated with the pyrometry department of the bureau of standards, Washington, and more recently was connected with the Champion Porcelain Co., Detroit.

* * *

James H. Hughes, recently appointed president and treasurer of the G. A. Swineford Co., Canton, O., manufacturer of hay tools, shovels, rakes, etc., has been connected with the steel industry 20 years. He succeeds G. A. Swineford, who retired from active service. Mr. Hughes was connected with the Carnegie Steel Co., the Illinois Steel Co., the Timken Roller Bearing Co., and until his assuming charge of the Swineford plant, was assistant general sales manager of the Apollo Steel Co.

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W. A. Arpe, recently appointed special agent of the Laclede Steel Co. with offices in St. Louis, began his career in the steel business in 1901 at the Western Tube Co. plant of the National Tube Co., Kewanee, Ill. In 1906 he had charge of pig iron sales in St. Louis for the Tennessee Coal, Iron & Railroad Co., which at the time was controlled by the Republic Iron & Steel Co. In 1907 when that company was taken over by the Steel corporation Mr. Arpe became associated with the latter organization. On February 1, 1922, he was made assistant manager of sales of the Carnegie Steel Co., Illinois Steel Co. and Tennessee Coal, Iron & Railroad Co. for the St. Louis district, which position he leaves to become associated with the Laclede Steel Co.

* * *

Joseph D. Morten, sales manager of Domhoff & Joyce Co., Cincinnati, pig iron and coke merchant and well-known pig iron salesman in the Middle West has been elected vice president of the company. The promotion comes to Mr. Morten after many years of service with the company in various capacities. At one time, Mr. Morten was the Cincinnati correspondent for IRON TRADE REVIEW. After leaving industrial journalism, he joined the sales force of Walter-Wallingford Co., Cincinnati. During the three yaers, he was connected with that company, Mr. Morten supervised its sales in the Cincinnati, Cleveland and Indianapolis territories. He resigned to become sales manager of the Domhoff & Joyce Co., in which connection he has had at various times charge of its sales offices at Chicago, Indianapolis and New York. For the time being Mr. Morten will combine his duties as vice president and salesmanager.

Iron Ore Prices Cut 80 Cents

Lake Superior Shippers Open Market with Large Sales—Keen Competition Leads to Much Greater Reduction Than Expected—May Affect Mine Operations—Pig Iron Production Cost Lowered Approximately $1.50

A REDUCTION of 80 cents a ton in the price of Lake Superior iron ore was announced last Friday by one of the largest producers. This applied on sales amounting to more than a million tons and was considered in the iron and steel industry as having established prices for 1924. The cut was more drastic than anticipated owing to the keen competition that has prevailed for several weeks. On the basis of 1.85 tons of standard grade of ore to a ton of pig iron, the saving to blast furnace companies will be $1.48 a ton on their product.

The new prices for the standard grades are as follows: Old range bessemer $5.65; Mesabi bessemer $5.40; old range nonbessemer $4.90 and Mesabi nonbessemer $4.75. In addition to these some companies recently have been quoting a high phosphorus ore with a guarantee of 51½ per cent iron natural in the base grade, 20 cents under the price of Mesabi nonbessemer. This grade now is priced at $4.55.

The foregoing are the prices for the ore delivered at lower lake ports. The unit values, which are computed by adding the arbitrary figure of 60 cents a ton to the lower lake prices, and dividing by the number of units of iron in the base grades, are as follows: Old range bessemer 11.364 cents; old range nonbessemer 10.680 cents; Mesabi bessemer 10.909 cents; Mesabi nonbessemer 10.388 cents, and high-phosphorus, 10.198 cents.

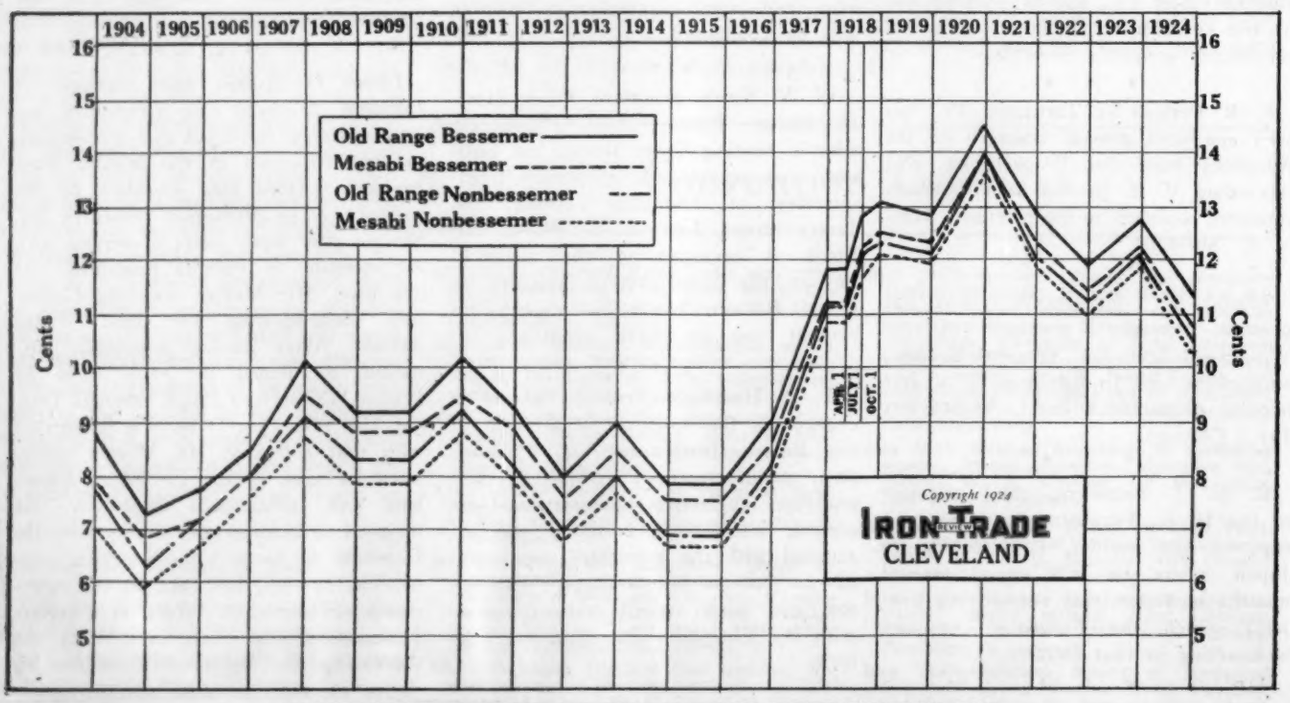
These prices are the lowest that have been in effect since 1915, and it was a surprise to many of the sellers and buyers to know that tonnage had been booked at a reduction exceeding the expectation of 50 cents.

The Ford Motor Co. entered the market with an inquiry for 250,000 tons of ore, at a time when pig iron sales were slackening and prices began to weaken. The ore industry has been geared up to a yearly productive rate of 60,000,000 tons or more. Producers grew less confident of duplicating their remarkable shipping record of 1923 revising their estimates downward to 55,000,000 tons or less. The large block of ore wanted by the Detroit manufacturer developed sharp competition. Fully 80 per cent of it was closed with Clement K. Quinn & Co.

Actually, however the market was not opened with the sale of the Ford tonnage. A few days later another producer announced a reduction of 80 cents. This was on Friday, April 4, and the new prices were applied by the company on two large blocks of ore for two steel companies in which it has a substantial interest. The same prices also applied on its term contracts, and on its open market quotations. Other producers immediately announced their intention to meet the new prices, and some reservations were converted into contracts at the new figures.

The published prices this year probably are closer to the actual prices at which the bulk of the business in the market is being transacted than were those last year. In 1923 the producers announced an increase of 50 cents, but such a large tonnage was pressing for outlet that lower prices applied on a large share of the business. However, there are a number of long-term contracts, wherein the producers have engaged to deliver ore at a certain figure under the so-called open market price, and the result will tell heavily against them. In the case of the shipper that opened the market, it has excellent mines operating at comparatively low cost, it controls its transportation facilities, and it has a freight rate differential from its principal mines amounting to about 16 cents below the rates from the head of the lakes. Few producers among the independents are more fortunately situated to meet such a situation as developed this year. The company has a large tonnage to dispose of in the open market.

Mine operators say their costs have not been reduced since last spring when wages were advanced 15 per cent. Lake vessel rates have not been announced for 1924, but it is believed there will be some



FLUCTUATIONS IN UNIT VALUES OF LAKE SUPERIOR IRON ORE

reduction, which will be to the benefit of the ore sellers, who bear the cost of transportation to lower lake ports. The date for the opening of navigation on the Great Lakes still is indefinite, but it is believed that some ore will be brought down from the Michigan ranges about April 20.

Many of the independent iron ore producers are dissatisfied with the new prices. They say that a reduction of 80 cents was not justified from the general trade standpoint. One of them summarized opinions in these words:

"The blast furnace operators would have been satisfied with a reduction of 50 cents, as contemplated, and that would have given the ore producers some profit and helped the iron and steel business generally. The reduction of 80 cents will have a demoralizing effect on the iron ore industry. Many mines will have to be shut down or operated only part of the time, because they cannot be operated at a profit at the prices named. It will have a serious effect in this respect.

"On the other hand, the sweeping cut has not stimulated the market. It has led many furnace operators to hold back, to see what is going to happen. The reduction of 80 cents will have a widespread effect on iron and steel prices, and the furnace operators will want to study the situation thoroughly before they purchase ore.

"The reservations that were made before the ore prices were established were not as large as last year, and the facts indicated an ore shipment for the season amounting to between 50,000,000 and 55,000,000 tons. The Ford tonnage was practically the only iron ore figured on in the open market, and probably is the only business of a substantial character that has been closed in the open market. The remainder represents reservations and contracts with associated consuming interests. We have felt a retarding influence already; we trust it will be only temporary.

"The ore shippers probably have little to look for in the way of a reduction in vessel rates. The vessel companies have had the benefit of a reduction in the price of coal, but that is all. As for the ore shippers they have not experienced any reductions in the operating costs from last season. If the new prices are below the level at which the mines can be worked profitably one can imagine what will happen in the ore industry. The producers are confronted with prospects of an unprofitable year, and in some cases, losses."

Other expressions were similar to this, and one producer stated he believed that some of the smaller mine operators "will be forced out of business."

A comparison of iron ore prices with those of pig iron shows that the standard grade of Mesabi nonbessemer ore has been reduced 14.4 per cent from the price of last year, while the present price of basic iron, valley, $22, is 29 per cent below the price as it stood at the date of the ore buying movement in 1923.

The present price of the ore is 21.6 per cent of the price of basic, while for 15 years the average relationship was 20.5 per cent of the basic price at the date of the ore buying movement. If the basic prices were averaged, from May to May, then the average ore price relationship for the last 18 years was 19.15 per cent.

Leading ore producers have in the past calculated ore prices in proportion to basic pig iron. Standard Mesabi nonbessemer has been regarded as a base grade for this ocmputation, with differentials for the other grades figured accordingly. They have been inclined to consider Mesabi nonbessemer as about one-fifth of the price of basic iron, valley.

Other ore shippers, however, believe the time has past for this sort of comparison, because of the increasing amount of ore going into steel products, and the relatively higher prices for steel. The average percentage relationship of ore to steel bars at the date of the ore buying movement from May 10, 1909 to March 24, 1923, was 11.57 per cent. The new price of Mesabi nonbessemer is 9.8 per cent of the present price of steel bars. Averaging

Percentage of Advances and Declines in Iron Ore and Pig Iron

Year	Date of Ore Buying	Mesabi Nonbessemer	Advance or Decline	Advance or Decline Per Cent	Basic Pig Iron Valley	Advance or Decline	Advance or Decline Per Cent
1924	April 4, 1924	$4.75	—$0.80	—14.4	$22.00	—$9.00	—29.0
1923	March 24, 1923	5.55	+ 0.50	+ 9.9	31.00	+ 6.00	+24.0
1922	June 9, 1922	5.05	— 0.50	— 9.0	25.00	+ 3.50	+16.2
1921	June 16, 1921	5.55	— 1.00	—15.2	21.50	—18.50	—46.2
1920	Feb. 2, 1920	6.55	+ 1.00	+18.0	40.00	+14.25	+51.4
1919	April 28, 1919	5.55	— .20	— 3.4	25.75	— 7.25	—21.9
*1918	Oct. 1, 1918	5.75	+ .25	+ 4.5	33.00	+ 1.00	+ 3.1
	July 1, 1918	5.50	+ .45	+ 8.9	32.00	.....	.....
	April 1, 1918	5.05	.....	.....	32.00	+ 7.00	+28.0
1917	Nov. 22, 1916	5.05	+ 1.50	+42.2	25.00	— 7.00	—38.8
1916	Dec. 7, 1915	3.55	+ .75	+26.7	18.00	+ 5.50	+44.0
1915	April 19, 1915	2.80	— .05	— 1.7	12.50	— .50	— 3.8
1914	May 1, 1914	2.85	— .55	—16.1	13.00	— 3.50	—21.2
1913	Nov. 19, 1912	3.40	+ .55	+19.2	16.50	+ 3.50	+19.2
1912	March 20, 1912	2.85	— .65	—18.5	13.00	— .75	— 5.4
1911	April 21, 1911	3.50	— .50	—12.5	13.75	— 3.50	—20.2
1910	Dec. 24, 1909	4.00	+ .50	+14.2	17.25	+ 3.00	+21.0
1909	May 10, 1909	3.50	.....	.....	14.25	— 1.25	— 8.0
1908	June 15, 1908	3.50	— .50	—12.5	15.50	— 6.50	—29.5

* Prices for 1918 established by the government.

Prices of Iron Ore and Pig Iron at Date of Ore Buying Movement, 1890 to 1924

Season	Date buying movement	Old range Bessemer	Mesabi Bessemer	Old range non-Bessemer	Mesabi non-Bessemer	Iron Prices Valley Bessemer	Valley Foundry Iron No. 2
1924	April 4, 1924	$5.65	$5.40	$4.90	$4.75	$23.00	$22.00
1923	Mar. 24, 1923	6.45	6.20	5.70	5.55	31.00	31.00
1922	June 9, 1922	5.95	5.70	5.20	5.05	25.00	24.00
1921	June 16, 1921	6.45	6.20	5.70	5.55	23.00	22.50
1920	Feb. 2, 1920	7.45	7.20	6.70	6.55	41.00	40.00
1919	Apr. 28, 1919	6.45	6.20	5.70	5.55	27.95	26.75
*1918	Oct. 1, 1918	6.65	6.40	5.90	5.75	35.20	34.00
	July 1, 1918	6.40	6.15	5.65	5.50	35.20	33.00
	Apr. 1, 1918	5.95	5.70	5.20	5.05	35.20	33.00
1917	Nov. 22, 1916	5.95	5.70	5.20	5.05	30.00	26.00
1916	Dec. 7, 1915	4.45	4.20	3.70	3.55	18.50	18.00
1915	Apr. 19, 1915	3.75	3.45	3.00	2.80	13.60	12.75
1914	May 1, 1914	3.75	3.50	3.00	2.85	14.00	13.25
1913	Nov. 19, 1912	4.40	4.15	3.60	3.40	17.25	17.50
1912	Mar. 20, 1912	3.75	3.50	3.00	2.85	14.25	13.25
1911	Apr. 21, 1911	4.50	4.25	3.70	3.50	15.00	13.75
1910	Dec. 24, 1909	5.00	4.75	4.20	4.00	19.00	17.25
1909	May 10, 1909	4.50	4.25	3.70	3.50	14.75	14.25
1908	June 15, 1908	4.50	4.25	3.70	3.50	16.00	15.00
1907	Nov. 5, 1906	5.00	4.75	4.20	4.00	21.50	21.50
1906	Dec. 5, 1905	4.25	4.00	3.70	3.50	17.25	17.25
1905	Feb. 1, 1905	3.75	3.50	3.20	3.00	15.50	16.00
1904	Apr. 15, 1904	3.25	3.00	2.75	2.50	13.35	13.15
1903	Mar. 20, 1903	4.50	4.00	3.60	3.20	21.50	21.65
1902	Feb. 1, 1902	4.25	3.25	3.25	2.75	15.90	15.90
1901	Apr. 15, 1901	4.25	3.25	3.00	2.75	16.15	14.40
1900	Dec. 15, 1899	5.50	4.50	4.25	4.00	24.15	22.15
1899	Feb. 1, 1899	3.00	2.40	2.15	2.00	10.30	9.75
1898	Mar. 20, 1898	2.75	2.25	1.85	1.75	9.55	9.80
1897	May 20, 1897	2.60	2.25	2.15	1.90	8.35	8.40
1896	May 1, 1896	4.00	3.50	2.70	2.25	12.40	11.15
1895	Apr. 1, 1895	2.90	2.19	2.25	1.95	9.40	9.40
1894	Mar. 1, 1894	2.75	2.35	2.50	no sale	9.65	9.65
1893	Mar. 15, 1893	3.85	3.00	3.20	no sale	12.65	12.15
1892	Jan. 31, 1892	4.50	no sale	3.65	no sale	15.00	13.65
1891	June 1, 1891	4.50	no sale	4.25	no sale	15.15	15.00
1890	Dec. 15, 1889	5.50	no sale	5.25	no sale	22.15	18.15

* Figures for 1918 established by the government.

the steel bar prices, from May to May, in the period referred to, the percentage of the ore price was 11.22. Compared with other finished steel prices, the new ore price also is found to be below the average.

Some of the ore producers stated that certain large steel companies would be satisfied this year with a reaffirmation of last year's ore prices, and they considered that stabilization of steel prices was more to be desired, from a general economic viewpoint, than a reduction in ore, with a consequent effect on steel. The first sales announced, however, were made by an ore producer to its associated steel companies.

The amount of iron ore at lower lake ports and at furnaces probably will be slightly below normal. If the present rate of consumption continues throughout April, the total will be 18,500,000 tons, compared with 19,680,000 tons May 1, 1923. The normal amount is about 20,000,000. The total on hand April 1 was 23,880,000 tons. The balance on Lake Erie docks April 1 was 6,062,589 tons, compared with 6,625,106 tons April 1, 1923.

Eastern and Foreign Iron Ore Prices Nominal

New York, April 8.—Establishment of the Lake Superior iron ore prices at a reduction of 80 cents per ton from last year's level has had only a nominal effect on iron ore prices in the East. Only a few iron ore tonnages have been closed in the East lately and special factors have had a bearing on the price. Eastern local ores for foundry and basic iron are regarded as nominal at 9 to 10½ cents per unit, delivered at eastern blast furnaces. On eastern copper-free, low-phosphorus ore, the market is entirely nominal at 12½ to 14½ cents per unit, delivered.

Prices are nominal as follows, on foreign iron ore: Spanish low phosphorus, 9 to 9½ cents per unit, c.i.f. tidewater; Algerian low phosphorus, 10 to 10½ cents; Swedish and Norwegian low phosphorus; 11 to 11½ cents; Swedish foundry or basic, 9 to 10 cents and Spanish and Algerian foundry or basic, 8 to 9 cents. Several lots of foreign iron ore are under negotiation, but there is no indication of any haste as to closing.

Empire Steel Improves

The financial report of the British Empire Steel Corp., Montreal, for the year ending Dec. 31, 1923 shows a marked improvement in earnings. A total of $4,444,346 of earnings, compared with $6,917,275 for 1922, the latter amount, however, includes the sum of $4,000,000 being the balance of amounts received in settlement of claims against the federal government for cancellation of ship plate contracts. The provision for sinking fund, depreciation and depletion of minerals absorbed $1,112,515, leaving a balance of $3,331,831, as compared with $3,289,476 in 1922.

Lake Superior Iron Ore Unit Values

	—OLD RANGE— Bessemer Cents	Non-bessemer Cents	—MESABI— Bessemer Cents	Non-bessemer Cents
1924	11.364	10.680	10.909	10.388
1923	12.818	12.233	12.364	11.942
1922	11.909	11.262	11.454	10.971
1921	12.818	12.233	12.364	11.942
1920	14.636	14.175	14.182	13.883
1919	12.818	12.233	12.364	11.942
*1918				
Oct. 1	13.182	12.621	12.727	12.330
July 1	12.727	12.136	12.273	11.845
Apr. 1	11.909	11.262	11.454	10.971
1917	11.909	11.262	11.454	10.971
1916	9.181	8.349	8.727	8.058
1915	7.909	6.990	7.455	6.699
1914	7.909	6.990	7.455	6.699
1913	9.091	8.155	8.636	7.767
1912	7.909	6.990	7.455	6.690
1911	9.273	8.349	8.818	7.961
1910	10.182	9.320	9.727	8.932
1909	9.271	8.350	8.818	7.961
1908	9.271	8.350	8.818	7.961
1907	10.182	9.320	9.727	8.932
1906	8.553	8.144	8.113	7.736
1905	7.671	7.107	7.231	6.792
1904	7.231	6.344	6.790	5.871
1903	8.994	7.954	8.112	7.196
1902	8.553	7.481	6.793	6.344
1901	8.553	6.818	6.793	6.344
1900	10.59	8.541	8.836	8.247

Fluctuations of iron ore prices expressed values of units of iron in natural state.
*Figures for 1918 established by government.

J. I. Case Net Is Higher

The J. I. Case Threshing Machine Co., Racine, Wis., earned approximately $634,000 from operations in 1923 compared with $321,000 in 1922, according to Warren J. Davis, president of the company. While conditions in the agricultural implement industry appear to be improving, says Mr. Davis, the outlook is not as yet so certain in the judgment of the directors as to make it wise to impair the company's surplus. The company's balance sheet as of Dec. 31, 1923, shows current assets of $20,600,000 against current liabilities of less than $5,900,000.

France Mines More Ore

Washington, April 8.—Despite the shortage of Ruhr coke shipments, which caused a reduction in metallurgical production, and also slowed down the mining of ore, the output of iron ore in France in 1923 amounted to 23,325,564 metric tons, compared with 21,032,000 tons in 1922, or an increase of about 10 per cent, the American commercial attache in Paris reports to the United States department of commerce.

Japanese Metallurgist Is Touring Country

Dr. Kotaro Honda, professor of physics and metallurgy at the research institute of iron, steel and other metals, Imperial university, Sendai, Japan, who is on his way to England, France and Germany, has been visiting various industrial centers in the United States. Accompanying Dr. Honda are two of his associates, Hiromu Takagi and Tokujiro Matsushita, lecturers in metallurgy. Various chapters of the American Society for Steel Treating are entertaining the visitors on their trip across the country.

On April 2 the Cleveland chapter of the American Society for Steel Treating entertained the Japanese representatives. From Cleveland the visitors went to Pittsburgh where they were met by past president T. D. Lynch and a reception committee. On April 9 they will be the quests of the Philadelphia chapter and from there will go to Washington to be the guests of Dr. G. K. Burgess, director of the bureau of standards and national president of the society. From Washington Dr. Honda and his party will proceed to New York where they will be entertained by the New York chapter on April 19. On April 21 they will sail for London to attend the May meeting of the Iron and Steel institute, this being the first meeting Professor Honda has attended since he receved the Bessemer Medal in 1921.

The party plans to return to Japan through the United States in September and has arranged an itinerary that will permit their attending the annual convention and exposition of the American Society for Steel Treating in Boston, Sept. 22-26. Dr. Honda and his associates have prepared papers to be presented at the convention.

To Redeem More Bonds

Charcoal Iron Co. of America, Detroit, has called for redemption $100,000 of its first mortgage bonds, dated Nov. 1, 1924, for May 1. This makes $200,000 of these bonds called for redemption in the past 60 days. The company reports that for the year ended Dec. 31 last, gross profits from operations were $1,277,494 and net earnings after deducting operating expenses, taxes and other similar charges, but before depreciation, were $740,688.

Ernest W. Bradbury has been appointed receiver of the Associated Producing & Refining Corp., New York. According to a statement issued on March 1, 1923, the assets of the corporation and its subsidiaries aggregated $34,000,000, which included oil properties, refineries, pipe lines and leases.

Obituaries

JOHN J. EAGAN, former president of the American Cast Iron Pipe Co., Birmingham, Ala., died March 30 at Asheville, N. C. Mr. Eagan was born in Griffin, Ga., April 22, 1870. Educated in the public schools, he early entered upon a business career. He was associated with his uncle, the late William A. Russell, who headed the American Cast Iron Pipe Co. Upon the death in 1899 of Mr. Russell, the active management of the company devolved upon Mr. Eagan. With the beginning of his last term as president he inaugurated with the company's employes at Acipco what he regarded as the practical application of the Golden Rule. This included establishment of industrial policies that were far-reaching, including election of employes as directors, management of the business through heads of various departments, boards on pensions, housing conditions, etc.

* * *

George Benton, president of the Conneaut Shovel Co., Conneaut, O., died there March 31.

* * *

Herbert V. Purman, mechanical engineer, associated with Stone & Webster, Inc., Boston, died recently at his home in Winchester, Mass.

* * *

J. Leonard Moore, inventor of a turbine which bore his name was found dead April 3 in his home in Wellsville, N. Y.

* * *

William Orlando Harris, former treasurer and head of the Boston office of the Rodney Hunt Machine Co., Orange, Mass., died recently at the Malden hospital, Malden, Mass.

* * *

Alexander McDowell, for more than 35 years in the employ of the Illinois Steel Co., died at his home in Milwaukee, April 3. Mr. McDowell rose from messenger and office boy at the age of 15 to mill superintendent which position he occupied for more than 20 years. He was a founder and vice president of the Smith Milling Co., Milwaukee, and was interested in several other companies.

* * *

Michael E. Duggan, widely known in the metalworking trades from his frequent contributions to the columns of the technical press, died March 30 in St. Catherine's hospital, Kenosha, Wis., after a brief illness from pneumonia. He was born in Chicago April 12, 1861 and lived there continuously until 14 years ago when he moved to Kenosha, Wis., to take charge of the pattern department in the local plant of the American Brass Co.

* * *

Charles Allen Munn, editor and publisher of the *Scientific American*, with which he had been associated 43 years, died April 3 at his home in New York aged 65 years. Mr. Munn attended to

JOHN J. EAGAN

his usual duties up to the time of his death, although suffering from the effects of a paralytic stroke last summer while he was on a fishing trip in Scotland. Mr. Munn was a son of Orson D. Munn who became interested in the *Scientific American* in 1846 which then was a year old. Munn & Co., was organized at that time to publish this paper. Charles Allen Munn graduated from Princeton in 1881 and also studied abroad.

* * *

Joseph Dick, inventor and manufacturer of farm machinery, died recently at his home in Canton, O. Mr. Dick had invented most of the molds of farm machinery manufactured by the Joseph Dick Mfg. Co., Canton, of which he had been president and active head since its founding 50 years ago. Born on a farm near Canton in 1840, he remained there until 20 years of age. He went to Canton as an apprentice in machinery model pattern making. After completing his course he entered the employ of the Ball Reaper Works as a machinist. He left Canton to accept a position as superintendent of the Joseph Hall Machine Co. in Oshawa, Ont. He returned to Canton in 1874.

* * *

Raymond Miller Howe, aged 30, vice president of the American Ceramic society, an authority on ceramics in this country, and technical metallurgical assistant to the president of the Kier Fire Brick Co., Pittsburgh, since April 1, 1923, died April 1 in his home in Pittsburgh. He was born at Elmira, N. Y., on March 15, 1894 and was graduated from Alfred university in 1915. He continued his studies in the graduate school of the University of Pittsburgh, receiving the master of arts degree in 1917, when he was appointed senior industrial fellow in the Mellon Institute of Industrial Research, in which position he was engaged in carrying on research work under the auspices of the Refractories Manufacturers association.

Mr. Howe made many contributons to the technology of ceramic manufacture and was a frequent contributor to ceramic technical journals. For four years he served as trustee of the American Ceramic society before becoming vice president.

Sells Its Coal Railroad

Sale by the American Rolling Mill Co., Middletown, of the Ashland Coal & Iron railroad to the Chesapeake & Ohio railroad, is announced by officials of the rolling mill company. This is a stretch of about 40 miles of railroad from Ashland to Seaton, Ky., formerly owned by the Ashland Iron & Mining Co. which was taken over when the American Rolling Mill Co. bought the latter in 1921. It has been used by the Chesapeake & Ohio railroad for several years under trackage rights. It is stated the price is $4,100,000, one-third paid now and the remainder equally in 12 and 18 months on notes by the buyer. A bond issue of $300,000 due in 18 months will be redeemed by the selling company. This sale is highly profitable as it reduces the net cost to the Middletown company, of the remaining Ashland properties to a moderate figure.

Detroit Motor Car Output Is Slowing Down

Detroit, April 8.—Several large automobile companies in this territory are reducing their output. This has reacted in a number of other lines, especially in steel sheets, nonferrous metals, and in the body-building industries. The automobile curtailment is said to be only temporary, to permit the absorption of cars now in stock.

While several of the automobile companies in the medium-priced class have curtailed operations 15 to 20 per cent, others are running on their high schedules, and in one of two instances, notably the Willys-Overland Co., production is being increased. One large firm that has been using as much as 300,000 pounds of copper weekly in its automobiles, is taking none this week, and the orders for next week are reduced to 200,000 pounds.

The industrial cities of the state report an average of 15 per cent greater employment than in 1919-20, the peak year. Total employment in this city for the week ended March 25 was 320,781 compared with 321,682 for the previous week, according to the Employers' association.

Freight Board Formed

Chicago, April 8.—Representatives of shippers and the railroads have formed the Midwest Regional Advisory board to bring industry and the carriers together and eliminate causes for numerous small freight rate disputes, which are now brought before the interstate commerce commission. Robert C. Ross, general traffic manager of Joseph T. Ryerson & Son, Chicago, is general chairman of the board. Other representatives of the iron and steel and allied interests include Fred Harwood and J. A. Barough of Crane Co., Chicago; C. T. Bradford, International Harvester Co., Chicago; L. R. Martin, Oliver Chilled Plow Co., South Bend, Ind.; A. R. Ebi, Deere & Co., Moline, Ill.; George W. Reed, Peabody Coal Co., Chicago; and G. B. Hetherington, W. O. Smith & Co., Milwaukee.

Steel Trust Projected

Washington, April 8.—A combination of Spanish iron and steel manufacturers is to be formed, probably with the aid of foreign capital, according to a report in Madrid, cabled to the department of commerce by the American commercial attache. It also is reported that 19 concessions were granted in February by the Spanish government, chiefly for drilling for oil and mining iron ore. The Bilbao iron ore market is in a cheerful state, although increased prices have lessened demand and shipments are declining except on previous contracts. A royal decree has been issued permitting the importation of automobiles free of duty for exhibition at the automobile fairs at Madrid and Barcelona. The temporary importation of tin plate for olive oil containers is being permitted.

Celebrates Anniversary

The Ferracute Machine Co., Bridgeton, N. J., on March 24 celebrated its sixtieth anniversary, and the eighty-fourth birthday of its president, Oberline Smith. The company entertained all of its employes, 23 of whom have served for 25 years and five for more than 45 years. At the same time, it opened a new wing of the plant. The company manufactures presses and dies and has made coin presses for China and Japan.

To Build Mine Loaders

Pittsburgh, April 8.—George E. Evans, director and former treasurer of the Joy Machine Co., has confirmed a report that the Joy Machine Co. had purchased the old plant of Colburn Machine Tool Co., at Franklin, Pa., for the purpose of manufacturing mechanical coal mine loaders. He said the consideration was $300,000.

The local company already has taken possession of the plant, which has been idle for several years, and expects to begin this month. The Colburn Machine Tool Co. now is located in Cleveland. The monthly output is expected to be 25 mine loaders.

To Modernize Furnace

Buffalo, April 8.—The Tonawanda Iron Corp., a subsidiary of the American Radiator Co., has blown out its A furnace at Tonawanda, N. Y., to begin repair and modernization work which will require three to four months. The stack will be equipped with a skip hoist and new bins, dock, ore bridge and other auxiliary equipment will be added before the furnace is lighted again. A contract for the steel construction work has been awarded to Wm. B. Pollock Co., Youngstown, O. Plans for the B stack call for complete rebuilding but this will not be undertaken immediately.

Report of Worthington Pump & Machinery Corp., for year ended December 31, 1923, shows net income of $1,670,850 after interest, depreciation and federal taxes. This compares with $879,685 in 1922.

Power Companies Merge into Super Group

Eleven electric power companies, representing a production of 2,000,000 horsepower for industrial and domestic uses and an invested capital of $315,000,000, have merged into a super-power electric system, to be known as the Co-operative Coal Field Super-Power group. The units serve Ohio, Pennsylvania, Virginia, West Virginia and Maryland with about 7,250,000 individual consumers, thousands of coal mines and a large number of industries in the Pittsburgh steel district.

Among those cities to be served by the super-power group are: Cleveland, Akron, Canton and Warren, O.; Erie, Pittsburgh, Johnstown, Altoona, Connellsville, Butler, Washington, Greensburg, McKeesport and Wilkinsburg, Pa.; Charleston, Wheeling, Fairmont, Clarkesburg and Parkersburg, W. Va.; Cumberland, Hagerstown and Frederick, Md., and Winchester, Va. Six of the largest units of the group comply with requirements of the plan advocated by Secretary Hoover, in that they are situated where they are assured of an adequate fuel supply for from 50 to 75 years.

Springs Works Expands

The Mitchell Spring Works, Johnstown, Pa., recently incorporated as the Mitchell Spring Mfg. Co., Inc., under the laws of Pennsylvania with $350,000 capital, will expand its plant. The Mitchell Spring Works was founded in 1905 when it took over the Lehigh Valley Spring Works, manufacturer of railroad, traction and industrial springs.

Fred A. Meckert, Joseph W. Irwin and Harry C. Sawyer, all of Pittsburgh have become associated in the company. Mr. Meckert is president and general manager. He has been with the Fort Pitt Mfg. Co. since 1919, going from the Standard Steel Co., Philadelphia, where he served 14 years as designer and manager of the spring department.

Joseph W. Irwin is vice president and general superintendent, and also comes from the Fort Pitt Spring Works after 12 years service.

Harry C. Sawyer has charge of the promotion of the new organization, with offices in the new organization, with offices in the new United States National bank building, Johnstown, Pa. The officers are: Fred A. Meckert, president and general manager; Harvey Mitchell, vice president and treasurer; Joseph W. Irwin, vice president and general superintendent; W. G. Mitchell, vice president and chairman of board of directors.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ONE of the largest automobile radiator plants in the country is planned by the Modine Mfg. Co., Racine, Wis., which has purchased the factory group of the Racine Hardware Mfg. Co. at Racine Junction and will remodel it for its own use. At present the Modine company leases 100,000 square feet in the old Sattley wagon group at Racine Junction. The acquired property includes a 4-story brick building, a separate power plant, a machine shop, foundry and a 3-story warehouse. The Mills Cabinet Co., which has been using several buildings, will vacate about July 1. The remaining portions will be remodeled and new machinery installed.

* * *

THE General Refractories Co. has increased the membership of its board of directors from 12 to 15. The new members are B. Dason Coleman, A. A. Corey Jr., and R. A. MacDonald.

* * *

NEWARK Machinery Exchange has been organized by J. Henry Dooley, with offices and display rooms at 59 Mechanic street, Newark, N. J. The company will specialize in automatic screw machines and deal in new, used and rebuilt machinery. It also will do liquidating and appraising.

* * *

DIRECTORS of the Otis Steel Co., Cleveland, were re-elected at the recent annual meeting. W. G. Mather is chairman of the board, other members chosen being George Bartol, D. T. Croxton, J. G. Carruthers, S. L. Mather, B. D. Quarrie, H. A. Raymond, Charles A. Otis, John Sherwin, E. R. Tinker, Elisha Walker and P. F. Wilson.

* * *

RICHEY-RHYNEARSON MACHINERY CO, 23-5 East South street, Indianapolis, has been incorporated by Granville A. Richey, Benjamin H. Rhynearson and Fred Schellenberg, formerly connected with the Vonnegut Machinery Co., that city. The new company will engage in the sale of new and rebuilt machine tools.

* * *

ARTHUR G. M'KEE & CO., Cleveland, recently have been awarded contracts by the Youngstown Sheet & Tube Co. for two revolving distributors to be installed at its plant at Indiana Harbor, Ind. One distributor will be installed at No. 2 blast furnace and the other at the No. 1 furnace.

* * *

THE Powell Pressed Steel Co., Hubbard, O., in annual meeting here re-elected directors and officers as follows: President, W. J. Powell; vice president, H. S. Wylde; secretary, E. J Powell; general counsel, A. M. Henderson. These officers with A. J. Mayers and William Hancox constitute the board of directors.

* * *

MANUFACTURE of automobile accessories, specialties, tools and hardware will be undertaken by the Ace Mfg. Co., 860-900 Fletcher street, Chicago, recently incorporated for $100,000. The plant which the company now occupies is completely equipped for immediate production. Nels W. Thybony is president and treasurer and E. T. Thybony secretary.

* * *

THE Columbia Power Co., subsidiary of the Columbia Gas & Electric Co., Cincinnati, recently awarded a contract to Fuller-Lehigh Co., Fullerton, Pa., for complete pulverized coal preparation, conveying and burning equipment and also for eight 1500-horsepower Babcock & Wilcox Co. boilers to be installed at the new Miami Fort power station. This work is in conjunction with the $20,000,000 expansion program recently inaugurated by the Columbia Gas & Electric Co.

* * *

AMONG the contracts recently closed by F. J. Ryan & Co., Philadelphia, were those for furnace control apparatus for the United States Cast Iron Pipe & Foundry Co. and the National Cast Iron Pipe Co., Birmingham, Ala.; Buffalo Bolt Co., North Tonawanda, N. Y.; Chase Metal Works, Waterbury, Conn.; American Copper Products Co., Elizabeth, N. J.; Standard Sanitary Mfg. Co., New Brighton, Pa.; John Illingworth Steel Co., Philadelphia; and the Hupp Motor Car Corp., Detroit.

* * *

THE Marlin-Rockwell Corp., following its recent acquisition of the Gurney Ball Bearing Co., has elected the following directors: Henry K. Smith, Alfred C. Davis, F. W. Gurney, Arthur W. Kettle, Charles M. Nichols E. Snell Hall, A. F. Rockwell, F. J. Galloway, Walter Robbins, Edgar Park, L. E. Stoddard and T. L. Chadbourne. Officers elected were Chairman, F. W. Gurney; president, Henry K. Smith vice president and general manager, Alfred C. Davis; treasurer, J. H. Walters and secretary, Ralph A. Gamble.

* * *

CONTROL of the G. A. Swineford Co., Canton, O., manufacturer of hay tools, shovels, rakes, etc., was changed recently when James H. Hughes, heading a new company, succeeded G. A. Swineford, retired, as president and treasurer. Mr. Hughes has been connected with the steel industry for 20 years, with the Carnegie Steel Co., Illinois Steel Co., Apollo Steel Co., Timken Roller Bearing Co. and other organizations. Folkert A. Schmidt of Cleveland has joined the Swineford company. He formerly was associated with Frederick W. Taylor, efficiency engineer. Mr. Schmidt will have charge of reorganizing the plant.

* * *

THE Ingalls Iron Works Co., Birmingham, Ala., fabricator of structural steel, buildings, bridges, etc., soon will begin production in the recently acquired plant of the Johnson-Thompson Co., that city. The Ingalls company specializes in structural steel while the acquired company fabricated tanks. It is likely, according to R. I. Ingalls, president of the Ingalls company, that the Johnson company will be incorporated shortly under the name of the Birmingham Tank Co. This would be a subsidiary of the Ingalls company. Through its recent acquisition the Ingalls company now is one of the largest structural steel fabricators in the South.

* * *

MERGER of the Muzzy-Lyon Co. and the Federal Bearing & Bushing Co., both of Detroit, under the title of Federal-Mogul Corp., recently was announced. The former company was established 30 years ago and was engaged in the manufacture of babbitt alloys. The Federal company was organized in 1915 to produce bronze babbitt-lined bearings and bronze bushings and castings. New officers are: J. H. Muzzy, chairman of the board; Lloyd P. Jones, president; H. Gray Muzzy, vice president; David W. Rodger, secretary; S. C. Reynolds, treasurer. H. W. Grant, F. C. Heath and C. R. Murphy, with the officers, comprise the board of directors.

Dullness Grows in Tool Market

Activity Slackens in Most Districts Although Inquiries Hold Up in Volume—Pittsburgh Industries Contemplate Large Purchases—Railroad Buying Shows Little Life—Used Equipment Demand But Fair—Crane Orders Light

SCATTERED sales of machine tools continue to constitute the main activity in the machinery and equipment market. Dullness grows in most districts, few industrial centers reporting an increased demand over the quietness of the past several weeks. Some machinery dealers in Chicago compare last week's business with the low point of 1921. In Pittsburgh the prospective machinery and equipment business is extensive, with many units of the United States Steel Corp. such as the Carnegie Steel Co.. American Sheet & Tin Plate Co., etc., contemplating large purchases. The Chesapeake & Ohio has put out a list of about 20 tools.

Although large railroad lists still are in the market waiting for action, little of the present business is coming from such sources. The Santa Fe still adds to its already long list, but shows no inclination to close up in a hurry for the tools which it has been seeking. Industrial buying generally also is declining. A period of keen competition is anticipated by the disinclination to invest money in machinery. The tendency is to postpone large expenditures and buy only as needed. Small tools are meeting no such dullness in demand as large ones.

Used equipment is moving in fair volume, some companies changing from new tool inquiries to buy used machines. In New England the tendency is the other way. One dealer in both classes of equipment claims demand has switched from used to the new tools. Small used tools continue to be closed on quickly with few of the heavier type being sold.

The crane market is quiet although there are some large orders in the market awaiting action. The Whiting Corp. was awarded contract for a 250-ton transfer table for the Southern railway. Most of the demand at present is from industrial companies.

Most Sales Still Single Machine Lots

NEW YORK, April 8.—While confined to single machines, orders for machine tools are more numerous, and inquiry is better. Possibly the largest new list is that of the Chesapeake & Ohio, involving approximately 20 tools of which several are fabricating machines. This railroad has been contemplating the issuance of a large list for sometime, and in some quarters, it is believed that these items are a foreunner of still additional inquiries. The American Locomotive Co., 30 Church street, this city, which has had a large list under contemplation for many weeks for its plant at Schenectaday, N. Y. now is figuring on several large machines, including heavy duty radial drills, slab millers, and frame planers.

Buying still is confined largely to railroad equipment. The New York Central has purchased a 48-inch planer, and has issued an inquiry for another planer. The Sante Fe railroad has purchased a 90-inch quartering machine; the Chicago, Rock Island & Pacific, a 58-inch rod miller; and the Canadian National, a 42-inch horizontal miller. Included in other awards are a 6-inch spindle horizontal floor borer for the Ford Motor Co., Detroit; a 10-foot vertical boring and turning mill for the Struthers Wells Co., Pittsburgh; and a 5-foot vertical boring mill for the Youngstown Sheet & Tube Co., Youngstown. A 2500-pound steam hammer has been purchased by the Page Steel & Wire Co., Monessen, Pa.

Crane buying is somewhat more lively, for while no large orders are reported, contracts are in greater number.

Buyers Consider New Tools

BOSTON, April 8.—Scattered sales of machine tools continue to be made fairly consistently, but no sales of size were completed last week. Several New England railroads have tentative lists against which they are asking prices. Dealers feel that actual negotiations in this connection are some weeks ahead.

The most important recent orders have been from public utilities. The Consolidated Gas Co. of Boston bought three lathes and four or five other tools. Other gas companies and several electric light companies have been buyers of machine tools during the week. A dealer in pipe cutting machines reports seven tools placed and inquiry much improved. A western Massachusetts manufacturer bought a special production milling machine, an automatic screw machine, and two or three smaller tools. Manufacturers of small tools report better rate of orders since the first of April.

Some encouragement is found in the present situation in a better sentiment toward new tools. One dealer handling both new and used tools states that his business has switched abruptly since the first of April from almost exclusive used tool transactions to a new tool business aggregating about 80 per cent of the total. Prices are holding firm considering the small amount of buying. A few concessions were reported early in the month, but there is little price cutting at the present time.

Pending Business Extensive

PITTSBURGH, April 8.—Pending machine and other equipment business in this and nearby districts is extensive. Many units of the United States Steel Corp. such as the Carnegie Steel Co., American Sheet & Tin Plate Co., National Tube Co. for Gary, Ind., etc., contemplate making large purchases, as do several manufacturers in the independent group of steel interests. Action on many of these awaits the tabulation of bids. The general tendency seems to be to postpone large expenditures and only to buy what is absolutely needed. The H. C. Frick Coke Co. closed on a single punch. The Pressed Steel Car Co. bought four punches, one of 600-ton capacity being a multiple punch awarded the Erie Steel Construction Co.; one of similar capacity complete with spacing table going to the Thomas Spacing Machine Co.; and two structural coping punches going to the Cleveland Punch & Shear Works. Other sales of machine tool equipment involving single installations are noted

by various dealers here. This also is noted in the used machinery market.

The crane market is quiet although a large number of propositions are up for attention, including the Jones & Laughlin Steel Corp., the Carnegie Steel Co., the Ford Motor Co., the Westinghouse Electric & Mfg. Co., and others. Through Dwight P. Robinson & Co., New York, the Southern Railway Co., Birmingham, Ala., bought a 250-ton electric transfer table from the Whiting Corp.

Market Is Less Active

CLEVELAND, April 8.—With the exception of a few special and semispecial machines the machine tool and equipment market was less active last week. One manufacturer sold two orders of three machines each to Chicago companies, but few other sales comprised more than one tool each. Inquiries are not maintaining the volume of that in the preceding weeks of 1924. The first part of this week brought out more prospective business and manufacturers and dealers feel more cheerful.

Used equipment dealers are finding few sales for large machines although small tools continue to be sold in fair volume. Many buyers of new tools are turning to the used machines which in some cases are being sold at less than half the original selling price. Inquiries are not scarce but buyers of large tools are not slow to place their orders.

Prospects for crane business indicate that April will be a better month than March. Much activity is expected when pending orders are closed.

Business Activity Slackens

CHICAGO, April 8.—Some machinery dealers in Chicago say that the dullness of last week is comparable only to the low ebb of 1921. Business done off floors was light, both as to the number of transactions and the size of tools purchased. Industrial operations have been tapering off and the sequel is a natural reluctance to invest more money in equipment. The Atchison, Topeka & Santa Fe railroad has put out an inquiry for a 24-inch upright drill press and a 16-inch x 8-foot geared head tool room engine lathe. The Cincinnati, Indianapolis & Western railroad is inquiring for a motor-driven hydraulic wheel press, a 24-inch tool grinder, an 18-inch engine lathe with a 10-foot bed and an 18-inch engine lathe with an 8-foot bed. A Milwaukee manufacturer of chain is in the market for several drills and presses. Dealers in used equipment also have felt the lull.

Trading Dullest This Year

CINCINNATI, April 8.—Trading in machine tools last week was the dullest this year. Manufacturers report a fair volume of inquiries but complain that buyers are not closing as rapidly as heretofore. The bulk of business continues to be done on individual tools, few lists calling for more than one or two being closed. The Columbia Gas & Electric Co., has purchased a 40-ton crane and a 45-ton steam locomotive crane for its new $20,000,000 generating plant, under construction on the Ohio river at Cleves, O. Recently the company placed orders for approximately $5,000,000 worth of machinery.

The American Locomotive Co., is inquiring for two 60-inch and two 72-inch special built planers. Plants of builders continue to operate at from 40 to 85 per cent capacity, those working at the higher rates being engaged in filling back orders. Practically all builders report a slight lull in inquiries and sales during the past week. It is reported that several tool manufarturers have received cancellations.

Reports from dealers of used machinery indicate that business closed last week was slightly less.

Crane Awards and Inquiries of the Week

Orders Placed

Four 3-ton, 5-motor double trolley cranes, with spans 72, 67, 32 and 40 feet respectively, for an eastern manufacturer, to the Pawling & Harnischfeger Co.

Three 10-ton electric cranes, one with 18-foot 6-inch span and two with 14-foot 6-inch span, for the Pittsfield, Mass., plant of the General Electric Co., Schenectady, N. Y., to an eastern builder.

Two 5-ton 3-motor cranes with 28-foot spans for the Wolff Mfg. Co., Chicago, to the Whiting Corp.

Two 10-ton cranes for a construction company in Baltimore, to McMyler-Interstate Co.

Single Machine Orders

200-ton 4-jack locomotive hoist complete for the Detroit Terminal Railroad Co., Detroit, to the Whiting Corp.

250-ton transfer table for Southern railway, Birmingham, Ala., to Whiting Corp.

200-ton 4-jack locomotive hoist complete for the Toledo, St. Louis & Western railroad, Toledo, to the Whiting Corp.

50-ton electric crane, 36-foot span, for Charles B. Hawley & Co., Philadelphia, to an eastern builder.

45-ton steam locomotive crane for Columbia Gas & Electric Co., Cincinnati, to unnamed builder.

40-ton electric traveling crane for Blaw-Knox Co., Pittsburgh, to Whiting Corp.

40-ton crane for Columbia Gas & Electric Co., Cincinnati, to unnamed builder.

30-ton crane with 33-foot span for the Niagara, Lockport & Ontario Power Co., Buffalo, to the Milwaukee Electric Crane & Mfg. Co.

30-ton, 1-motor crane, 51-foot span for the General Management & Engineering Co., New York, to the Whiting Corp.

30-ton locomotive crane for the Merchants Despatch, Rochester, N. Y., to Industrial Works.

30-ton traveling handpower crane for Montaup Electric Co., Fall River, Mass., to Whiting Corp.

25-ton crane for a steel company in Pittsburgh, to McMyler-Interstate Co.

20-ton handpower crane, 55-foot span, for shipment to Cuba, to the Whiting Corp.

20-ton locomotive crane for the Beattie Construction Co., Fall River, Mass., to the Ohio Locomotive Crane Co.

20-ton electric traveling crane for the Kewanee Boiler Co., Kewanee, Ill., to Whiting Corp.

15-ton locomotive crane for the Cap May Sand Co., Cap May, Va., to the Ohio Locomotive Crane Co.

15-ton used Ohio locomotive crane, 50-foot boom, for the Harris Structural Steel Co., Steelton, Pa., to Philip T. King, New York.

Electric crane, 52-foot span, for the Tonopah Extension Mining Co., New York, to the Pawling & Harnischfeger Co.

10-ton electric crane, 32-foot span, for the J. L. Mott Iron Works, Trenton, N. J., to the Pawling & Harnischfeger Co.

10-ton 3-motor crane with 30-foot span for the Kropp Forge Co., Chicago, to Whiting Corp.

10-ton 3-motor crane with 69-foot span for the Norfolk & Western railway, Roanoke, Va., to the Whiting Corp.

6-ton handpower crane for Santa Marta, South America, to the Chisholm-Moore Mfg. Co.

5-ton 3-motor crane with 55-foot span for the Illinois Car Mfg. Co., Chicago Heights, Ind., to the Whiting Corp.

3-ton, 1-motor crane, 23-foot span, for A. R. Purdy & Co., New York, to Alfred Box & Co.

2-ton single I-beam crane, 30-foot span, for the Heilman Boiler Co., Allentown, Pa., to the Whiting Corp.

2-ton electric single I-beam crane, 31-foot span, for Jones & Laughlin Steel Corp., Pittsburgh, to the Shepard Electric Crane & Hoist Co.

2-ton wall crane, 5-foot reach, for the Lynchburg Foundry Co., Lynchburg, Va., to the Pawling & Harnischfeger Co.

¾-ton, 2-motor crane, 26-foot span, for Russell, Birdsell & Ward Bolt & Nut Co., Port Chester, N. Y., to the Pawling & Harnischfeger Co.

Whirler, equipped with 1½-yard bucket, for C. D. Beckwith, Bronx, New York, to the Lambert Hoisting Machinery Co.

Orders Pending

Fifteen or more cranes for an automobile manufacturer; several crane manufacturers in Pittsburgh district bidding.

Twelve cranes for the Westinghouse Electric & Mfg. Co., Sharon, Pa.; bids being tabulated.

Two cranes for the Wheeling Steel Corp., Wheeling, W. Va.; bids being tabulated.

Two cranes for Dwight P. Robinson & Co., New York, one 100-ton electric overhead crane being for a power plant for the Los Angeles Gas & Electric Co. and one 2-yard high speed bucket handling crane, 34-foot span, for handling coal at a plant in St. Louis.

150-ton wrecker for the Erie railroad; bids asked.

30-ton locomotive crane for the Louisville & Nashville railroad; pending.

15-ton handpower crane, 54-foot span, for the West Philadelphia plant of the General Electrict Co., Schenectady, N. Y.; bids asked.

5-ton or 7-ton crawler crane, either gasoline or electrically operated, for George A. Fuller & Co., Flatiron building, New York; bids asked; understood for use in connection with work in Philadelphia.

Cranes for the Westinghouse Airbrake Co., Wilmerding, Pa.; bids being tabulated.

Cranes for the Carnegie Steel Co., American Sheet & Tin Plate Co., National Tube Co., and other units of the United States Steel Corp.; action still deferred.

Recent Industrial Business Changes

CHARLES HUBBARD & CO., New York, has changed its offices from 81 Fulton street to the Whitehall building, 17 Battery place. The company has been appointed representative of the Howard Steel Corp., Buffalo, in the sale of wrought iron rudders and stern frames and also represents the Camden Forge Co., marine department, Camden, N. J.; Reading Iron Co., Scott foundry department, Reading, Pa.; Sterling Steel Foundry Co., Braddock, Pa., and the Falls Hollow Staybolt Co., Cuyahoga Falls, O.

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American Chemical Paint Co., James H. Gravell, president, has moved its offices and factory from Philadelphia to Ambler, Pa.

* * *

The name of the Hoosier Drilling Machine Co., Goshen, Ind., has been changed to the Hoosier Universal Machinery Co.

* * *

The Diefendorf Gear Corp., Pearl street, Syracuse, N. Y., has moved its plant from that location to 920 West Belden avenue.

* * *

Ann Arbor Machine Co. has removed its main office and plant from Ann Arbor, Mich., to Shelbyville, Ill. Company builds hay presses and operates foundry.

* * *

The West Leechburg Steel Co., has removed its Pittsburgh office from the fifteenth floor to the eighth floor of the Farmers Bank building.

* * *

The Mitchell Spring Mfg. Co., Inc., Johnstown, Pa., has been incorporated for $350,000 to take over the Mitchell Spring Works. Immediate expansion is planned.

* * *

The J. E. Duff Co., Inc., has moved from New York to 95-103 New Jersey Railroad avenue, Newark, N. J. Larger quarters and better handling facilities are provided. A 10-ton and 5-ton crane are used for handling heavy machines.

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The Palmer Steel Co., steel fabricator with construction plant and general offices at Springfield, Mass., has opened a Boston office on the ninth floor of the Oliver building, 141 Milk street.

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Moltrup Steel Products Co., Beaver Falls, Pa., has changed its Boston office location from 201 Devonshire street to 80 Boylston street.

* * *

Athens Foundry & Machine Co., Athens, O., changed hands for the third time this year, M. L. Yuster, Columbus, O., purchasing the property from W. L. Wallace, Nelsonville, O.

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Keystone Mfg. Co., Altoona, Pa., is establishing a branch plant at Sharon, Pa., for manufacture of railway track accessories. Offices will be in the Messina building, Sharon.

* * *

The Fitzsimons Co., Youngstown, O., producer of cold finished steel products has moved its Cleveland district sales office to 1160 Union Trust building. Archil Loyer is Cleveland district sales manager, assisted by John Keleher.

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The plant of the defunct Miami Cycle & Mfg. Co., Middletown, O., has been sold for $40,000 to the Lawrence Bag Co. of Miamisburg, O. The bag company will take possession of the plant immediately.

* * *

The Enterprise plant of the American Stamping & Enameling Co., Massillon, O., has been purchased by the Bellaire Enamel Co., manufacturer of pottery. The plant of the Bellaire Enamel Co. recently was burned.

* * *

H. W. Jarrett has changed his address to Rockefeller buiding, Cleveland. He represents the following companies: Hagan Corp., Pittsburgh; Williams Gauge Co., Pittsburgh; Bernitx Furnace Appliance Co., Boston; National Co., Boston, and Botfield Refractories Co., Philadelphia.

* * *

Herbert E. Nelson, Frankfort, Ind., has purchased half interest in the Frankfort Machine Works, that city, from Ted R. Spray. Charles Bowers, founder or the machine company, who was associated with Mr. Spray, still retains his half interest in the company and will continue in business with Mr. Nelson.

* * *

Connecticut Tool & Engineering Co., Bridgeport, Conn., manufacturer of special machinery, has moved its factory from 304 East Washington avenue, to new quarters at 109 Holland avenue. The partnership operating the company was dissolved, Hans Dineson withdrawing from the business and Daniel J. Williams remaining the proprietor.

* * *

The Galt Machine & Screw Co., Ltd., Galt, Ont., has been recapitalized for $500,000 and will expand the business formerly operated by the Galt Machine Screw Co., Ltd. Considerable new equipment is to be purchased for expansion purposes. R. W. Roelofson is president of the company, C. E. A. Dowler, vice president, and C. K. Jansen, secretary and treasurer.

* * *

Zeller Lacquer Mfg. Co., New York, manufacturer of dip, brush and spray lacquers, lacquer enamels and bronzings, has established branch offices at 603 East Seventh street, Los Angeles and 67 Steuart street, San Francisco. C. H. Gaylord will be in charge of the Los Angeles office and W. W. Partridge the manager of the one in San Francisco. The Ormor Sales & Supply Co., 1428 Court place, Denver, was appointed representative in that territory.

* * *

Purchase of Automotive Corp., Hazelton, Pa., by the Victor Piston Pin Co., Indianapolis, has been announced by D. L. Fryer, president of the latter company. The Hazelton equipment will be moved to Indianapolis for consolidation with the Victor company, which manufactures piston pins for airplanes, motorcycles, motor boats and automobiles. The officers of the company in addition to Mr. Fryer, are J. H. Gallagher, vice president; Victor H. Carmen, treasurer, and L. H. Fryer, secretary.

New Construction and Enterprise

Where additional information is presented, reference is made to date of issue in which previous item appeared.

HOLT, ALA.—Central Foundry Co. has let contract to A. Laycock & Son, Tuscaloosa, Ala., for dismantling, removing and rebuilding cleaning mill for new foundry. Ingalls Iron Works Co., Birmingham, will do the structural work. Addition to No. 3 pipe foundry will be 140 x 420 feet with 40 x 60-foot cupola house. *Noted Feb.* 28.

MOBILE, ALA.—H. C. Jones Welding Co. has been incorporated for $4000 by A. M. Brown, H. C. Jones and G. L. McLaren to do a general welding and machine business.

LOS ANGELES—The Southern California Foundry Co., Westminster road, Alhambra industrial district, plans expansion in near future, according to Eugene Sanders, secretary and treasurer. The company, recently incorporated, makes iron pipe and fittings.

BRIDGEPORT, CONN.—The Hardware Specialties Mfg. Co. has been incorporated for $50,000 by Samuel Zimmer and others.

WEST HARTFORD, CONN.—The Standard Metal Specialty Co. has been incorporated for $20,000 by Frederick B. Chamberlin and others.

ACME STATION, BARTONVILLE, ILL.—Acme Factory Sites, Inc., has been incorporated for $120,000 to manufacture and deal in farm machinery and parts, by John H. Bontjes, Arthur Lehmann and Clarence A. Ulman.

CHICAGO—Chicago Blow Pipe Co., 210 North Clarkson court, has plans for 1-story work shop addition.

CHICAGO—The Benjamin Electric Co., 847 West Jackson boulevard, has plans for extending 4-story plant at 213 South Green street. Company manufactures electrical equipment.

CHICAGO—Asco Auto Spring Corp., 1303 West Jackson boulevard, has been incorporated for $100,000 to manufacture and deal in springs, automobile accessories, and appliances, by John H., Mary A. and Herbert M. Moberg.

CHICAGO—Fred Dolle, Inc., 669 West Madison street, has been incorporated for $100,000 to manufacture and deal in barbers' tools, mechanics' tools, etc., by Helen B. Dolle, E. C. Dolle and Fred Dolle.

CHICAGO—Food Display Machine Corp., 20 East Jackson boulevard, has been incorporated for $150,000 to manufacture and deal in machinery for food production, by A. Arthur Yort, William M. Kelley and Mary J. McKendric.

SPRINGFIELD, ILL.—Smith Color & Chemical Co., 514½ East Monroe street, has been incorporated for $200,000 to manufacture and deal in products of iron, steel, manganese and copper, etc., by Arthur E. Prince, George W. Solomon and George B. Smith.

FORT WAYNE, IND.—V. M. Nussbaum & Co. has been incorporated for $100,000 to build machinery, by V. M., Sussana, N., H. B. and Caroline N. Nussbaum, J. W. Thompson and I. G. Fischbach.

TERRE HAUTE, IND.—The Riverside Iron & Metal Co., Inc., has been incorporated for $2500 to deal in scrap metals, by Ben and Anna Wexler and J. George and Sophia B. Waywell.

KANSAS CITY, KANS.—Fairfax Iron & Steel Co., plans 1-story, 100 x 700-foot plant for which Horner & Wygatt, 306 McMillan building, is architect. W. W. Shay, 908 Daniels building, Tulsa, Okla., is interested. *Noted April 3.*

LEAVENWORTH, KANS.—The machine department of the Great Western Mfg. Co. was burned April 3 with heavy damage.

ELLSWORTH, ME.—The Ellsworth Machine Co. has been incorporated for $10,000 with Reuben H. Davis as president.

HAGERSTOWN, MD.—The Tidewater Steel Corp., M. D. Perine, Baltimore, president, will construct plant here on site recently purchased.

BOSTON—The Cushing Refrigerator Co. has been incorporated for $50,000 to build refrigerating machinery, with Alfred J. Cushing as president.

FALL RIVER, MASS.—The Commonwealth Heating & Ventilating Co., Inc., has been formed with $25,000 capital by Charles Setendre, Charles Setendre Jr. and W. F. Dugay.

WORCESTER, MASS.—The Wakefield All Steel Wrench Co., Inc., has been formed with 400 shares no par value stock with Clarence E. Wakefield as president.

GRAND RAPIDS, MICH.—Riverside Brass & Aluminum Foundry Co., 449 Market avenue, southwest, recently has been incorporated for $15,000 with George G. Cady as president, Henry Buskers as vice president and Leonard DeVos as secretary and treasurer.

KANSAS CITY, MO.—Quarry Machinery & Engineering Co. has been incorporated by L. R. Pearis and C. C. Stentz.

KANSAS CITY, MO.—Main Burner & Heating Co. has been incorporated for $50,000 to manufacture heaters and burners, by D. W. Main, 4939 Prospect avenue, and J. J. Stines, 3245 Victor avenue.

MORRISON, MO.—Fore Piston Ring Mfg. Co. has been incorporated by John Mittendorf, George F. Freechmann and others to manufacture piston rings for automobile and stationary engines.

ST. LOUIS.—Crescent Tool & Mfg. Co. has been incorporated for $20,000 to manufacture tools, etc., by F. W. Grundmann, 2349A Washington street, and O. W. Reinke.

ST. LOUIS.—Economy Engine Corp. has been incorporated by Symour Schiele, Buckingham hotel, and Ernest Evans, 6644 Washington avenue to build and repair engines.

OMAHA, NEB.—Nebraska Power Co. has been granted permission for stock issue, proceeds of which are to provide funds for expansion, including $1,000,000 substation here.

CALDWELL, N. J.—H. E. Schanz Co., 340 Bloomfield avenue, has been incorporated for $125,000 to manufacture tools, farming implements and hardware.

NEWARK, N. J.—B. & P. Drop Forge Corp., 9 Clinton street, has been incorporated for $125,000 to manufacture drop forgings and hardware.

TRENTON, N. J.—Standard Steel Co., Inc., 109 Hanover street, has been incorporated for $125,000 to do a general steel contracting and dealing business.

AMSTERDAM, N. Y.—C. H. Collins Mfg. Co. has been incorporated for $25,000 to manufacture tools and build machinery, by C. H. Collins. A. Suter and J. R. Cline, with C. J. Heffernan as attorney.

BROOKLYN, N. Y.—City of New York, Rapid Transit commission, George McAneny, 49 Lafayette street, chairman, plans $500,000 repair shop in the Coney Island yards.

BROOKLYN, N. Y.—A $10,000 1-story addition will be erected by the Shipley Construction & Supply Co., 201-3 Forty-second street, Brooklyn, manufacturer of ice-making machinery.

BROOKLYN, N. Y.—Blue Blaze Oil Burner Corp. has been incorporated for $50,000 to build stoves and furnaces, by C. B. Jarvis, J. F. Weller and W. H. Gaston, with L. A. Anderson, 27 Cedar street, as attorney.

BROOKLYN, N. Y.—Ferro Corp. has been incorporated with 500 shares no par value stock to manufacture metal articles, by A. B. Mellor, E. P. Larkin and C. C. Webster, with Curtis, Mallet, Provost & Colt, 30 Broad street, as attorney.

BROOKLYN, N. Y.—Carter, Milchman & Frank Co. has been incorporated for $15,000 by F. Carter, M. S. Milchman and J. R. Frank, to manufacture and deal in hardware and tools. Horn & Flamm, 32 Court street, is attorney.

BROOKLYN, N. Y.—Yeller-Jack Mfg. Corp. has been incorporated for $50,000 to manufacture device to remove carbon from spark plugs, by M. Rosen, L. A. Rahe and G. W. Ritter, with L. F. Greene, 44 Court street, as attorney.

BROOKLYN, N. Y.—Vehicle Time Keeper Co. has been incorporated for $125,000 to manufacture devices for motor vehicles by D. Sutherland, M. M. Mansfield and R. Cumberland, with J. Howe, 34 Jefferson avenue, as attorney.

BUFFALO, N. Y.—William Cleesattel & Son, has been incorporated for $95,000 by W. and W. A. and C. C. Cleesattel, with S. N. Elsner, as attorney.

CASENOVIA, N. Y.—Edward C. Chappelle Co. has been incorporated for $250,000 to manufacture and install heating systems, by E. C. Chappelle, H. Kessler and F. Bellinger, with F. H. Collin, Syracuse, as attorney.

HUNTINGTON, N. Y.—Naufalk Fuel Service, has been incorporated for $12,000 to manufacture stoves and furnaces, by S. E. Pettit and H. C. Edgar, with I. R. Swezey as attorney.

LONG ISLAND CITY, N. Y.—Conveying machinery, power and other equipment, will be installed in a $750,000 confectionary plant to be erected by Henry Maillard, 368 Fifth avenue, Manhattan. Buchman & Kahn, 49 West Forty-fifth street, are architects in charge.

NEW YORK—Frecker Bros. has been incorporated to build and deal in machinery and parts, by A. N. and G. N. Frecker, with H. S. Cook, 38 Park Row, as attorney.

NEW YORK—A $180,000 6-story garage and repair shop will be erected at 195-99 Washington street by the Alumor Garage Co., 116 Nassau street.

NEW YORK—Martin Brass Works, has been incorporated for $25,000 by J. S. Hemingway Jr., W. J. Scanlon and C. Green, with Lord, Day & Lord, 25 Broadway, as attorney.

NEW YORK—A $300,000 automobile repair shop will be erected in West Forty-first street, from plans by Shampan & Shampan, 188 Montague street, Brooklyn.

NEW YORK—International Casting Co. has been incorporated for $50,000 by L. Timberg, W. W. Lambert with M. Rothenberg, 261 Broadway, as attorney.

NEW YORK—Sanzo Metal Form Construction Co. has been incorporated for $20,000 by N. A. Sanzo, H. C. Hardy and C. E.

Finken, with R. Gray, 16 Liberty street, as attorney.

NEW YORK—Liquid Overflow Preventer has been incorporated for $100,000, to build oil burners and engines, by J. Shorr, J. R. Brodsky and V. Marcantonio, with Hale, Nilles & Shorr, 80 East Eleventh street, as attorney.

NEW YORK—Dulgee Products, has been incorporated for $25,000 to manufacture electrical and mechanical tools, by O. S. Blinn, R. W. Lillie and L. Shipwith, with Kelley & Blinn, 68 William street, as attorney.

NEW YORK—The Northern Union Gas Co., 1815 Webster avenue, will build equipment maintenance shop, at 304-12 Kingsbridge road, Bronx. Jardine, Hill & Murdock, 347 Madison avenue, is architect.

NEW YORK—A $100,000 automobile service and repair shop will be erected by Nathan Rotholz, 311 Lenox avenue, architect, for an unnamed builder. The proposed structure will be two stories high, 82 x 205 feet, and will be built on Marion avenue.

NEW YORK—Electruck Corp. has been incorporated with 10,000 shares preferred stock $100 par value, and 60,000 shares no par value common stock, to build electric automobiles, by R. D. and W. S. Ward and E. M. Rabenoid, with Rabenoid & Scriber, 61 Broadway, as attorney.

QUEENS, L. I., N. Y.—A. M. Blumberg Scrap Iron & Steel Co. has been incorporated for $2500 by E. L. and J. Blumberg and A. M. Clark, with E. P. Harris, 233 Broadway, as attorney.

ROCHESTER, N. Y.—Inter-Industries, has been incorporated with 400 shares no par value common stock to build machinery, by A. H. Hughes, H. S. Curren, and A. L. Mepham, with Albright & Mepham, as attorneys.

TROY, N. Y.—Troy Coke & Iron Corp. has been incorporated with 30,000 shares $100 par preferred stock and 1000 shares no par common by J. A. Burden, J. W. Dorty and E. A. Tutein.

MURPHY, N. C.—Cherokee Iron & Mining Co. has been incorporated for $50,000 by W. I. Ennis, Beckley, W. Va.; Floyd H. Hiratt, Charleston, W. Va., and R. F. McFail, Murphy.

BELLAIRE, O.—Work is under way for remodeling the Enterprise enamel plant of the American Stamping & Enameling Co. recently purchased by the Bellaire Enamel Co. Ben Kapner is president of the Bellaire company.

CINCINNATI—Davis Welding & Mfg. Co. has retained Lockwood, Greene & Co., Boston, engineer, to prepare plans for 1-story, structural steel, 225 x 120-foot plant to provide additional space for the manufacture of automobile truck bodies.

NAPOLEON, O.—The Plummer Auto Supply Co. plans expansion this summer and will erect addition to plant and install additional equipment. The company manufactures automatic paint sprays.

SIDNEY, O.—Gartland-Haswell Co. operator of gray iron foundries, was damaged by fire March 25 in the core room.

OKLAHOMA CITY, OKLA.—Burnley Machinery Co. has been incorporated by H. E. Burnley and A. E. Kalkhurst for $10,000.

CONNELLSVILLE, PA.—The Sligo mill of the Lockhart Iron & Steel Co., was damaged by fire April 3. No plans have been announced with reference to rebuilding.

HARRISBURG, PA.—Bids are being received by the Air Reduction Co., Inc., 342 Madison avenue, New York on a $250,000 plant in this city. Francisco & Jacobus, 511 Fifth avenue, New York is engineer.

PHILADELPHIA—Bids will close April 16 on the erection of a municipal power house at Wheatsheaf Lane.

PHILADELPHIA—Robert G. Foster has closed on the general contract for erection of a $10,000 warehouse to the George Kessler Contracting Co., 1733 North Marvine street.

PHILADELPHIA—Work will be started at

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.26c to 3.36c
Detroit	3.35c
Los Angeles	3.75c
New York	3.49c
Philadelphia	3.22c to 3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.49c
Philadelphia	3.22c to 3.47c
St. Louis	3.35c

REINFORCING BARS

Boston	2.90c
Chicago	2.75c to 3.00c
Cincinnati	3.50c to 3.60c
Cleveland	3.36c
Los Angeles	3.50c to 3.60c
Philadelphia	3.47c
Pittsburgh	2.50c to 2.65c
San Francisco, C. L.	3.65c
San Francisco L. C. L.	4.00c
Seattle	3.50c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.36c to 3.46c
Detroit	3.45c
Los Angeles	3.85c
New York	3.59c
Philadelphia	3.34c to 3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	3.60c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.36c to 3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.59c
Philadelphia	3.32c to 3.57c
Philadelphia, 3/16-inch	3.57c to 3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.30c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.00c
New York	4.34c
Philadelphia	3.85c to 4.10c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.20c
Philadelphia	4.90c to 5.15c
New York	4.85c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.75c
St. Paul	4.95c

NO 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	6.10c
Chicago	5.60c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.00c
New York	5.85c
Philadelphia	6.00c to 6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	5.75c
St. Paul	5.75c to 6.00c

BANDS

Boston	4.315c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	4.65c
New York	4.39c
Philadelphia	4.02c to 4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	4.50c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.02c to 4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD FINISHED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.45c
Buffalo (shapes)	4.95c
Chicago (rounds)	4.00c
Chicago (shapes)	4.50c
Cincinnati (rounds)	4.25c
Cincinnati (shapes)	4.75c
Cleveland (rounds)	4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.60c
New York (rounds)	4.40c
New York (shapes)	4.90c
Philadelphia (rounds)	4.10c to 4.35c
Philadelphia (shapes)	4.60c to 4.85c
Pittsburgh (rounds)	4.05c
Pittsburgh (sq. hex and flats)	4.55c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.00c
St. Paul (rounds	4.25c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	Galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

once on a $50,000 garage and repair shop at Orthodox and Frankford streets, by A. Leibovitz, 4045 Baltimore street.

PHILADELPHIA—J. G. T. Miller, 2325 West Alleghany, has received the general contract for the erection of a $4000 mill addition, for the Westmoreland Mfg. Co, 1111 Westmoreland.

PHILADELPHIA—General contract for the erection of an $8000 machine shop for A. D. Wiler, 258-66 North Clarion street, has been awarded to Harry G. Walter, 412 North Fortieth street.

PHILADELPHIA—Contract for a $15,000 alteration to the manufacturing building of Carlisle & Doughty, 2530 North Broad street, has been awarded to Henry P. Snyder, 3713 York road.

PHILADELPHIA—The brass foundry of the J. E. Lonergan Co., 211 Race street, manufacturer of steam specialties, recently was damaged by fire. It is understood that approximately $30,000 will be expended on a new structure.

PITTSBURGH—The Wolverine Supply & Mfg. Co., 1218 Western avenue, Northside, will erect $100,000 plant for manufacture of automatic toys. H. K. Ferguson Co., Cleveland, is engineer.

READING, PA.—Work has been begun by the Chantrell Hardware & Tool Co., on the erection of a 3-story plant addition, 50 x 140-feet, costing $55,000.

SUMTER, S. C.—Gravity Tank Co. has been incorporated for $10,000 to build tanks, etc., with B. D. Hodges as president and Raymond Schwartz as treasurer.

ATHENS, TENN.—The Athens Plow Co., recently purchased a site where it will construct 60 x 120-foot plant addition. Modern machinery will be installed in the foundry, including electric furnace for steel castings. J. G. Stephenson is inventor of the plow and organizer of the company.

NASHVILLE, TENN.—The Peeler Mfg. Co., 1104 South street, has been incorporated for $10,000 to manufacture piston rings and other automobile accessories and parts, by M. L. Baxter and F. H. Galloway. Company has plant which it is enlarging.

SALT LAKE CITY, UTAH.—The United States Fuel Co. has contracted with Roberts & Schaefer Co., Chicago, for installation of tipple and screening bins at East Hiawatha, Utah. Roberts & Schaefer have purchased 150 tons of structural steel from Worden-Allen Co., Milwaukee, to proceed with the work. Loading booms, screens, revolving dump, etc. will be required.

NORFOLK, VA.—Norfolk Blower & Pipe Corp. has been incorporated for $15,000 with C. T. Stotts, as president, H. M. Wise as secretary and treasurer, with plant at Twenty-second and Omohundro avenues. It will install tools to manufacture dust collectors and do general metal work.

ACKERMAN, W. VA.—The Titan Cement Co. will erect a 1200-barrel capacity cement making plant on the Potomac river between Keyser and Cumberland.

CLARKSBURG, W. VA.—Joiner Iron Works, has let contract to Concrete Steel Bridge Co., for 2-story, 50 x 82-foot machine repair shop of brick and tile construction. Charles E. Lamberd Jr., 217 Monticello avenue, is secretary.

PARKERSBURG, W. VA.—The Seward Wire Co. has let contracts for 1-story brick plant addition to double wire weaving capacity. J. O. Seward is president.

WHEELING, W. VA.—The Waterhouse Bros. Brass Foundry Co., Wood street, will remodel the city railway building recently acquired and install additional equipment.

WHEELING, W. VA.—Tyler Iron Works, 2243 Main street, has awarded contracts for constructing plant addition, 30 x 38 feet. As soon as completed new equipment will be purchased. Charles F. Beechmann is president.

FOND DU LAC, WIS.—The Anderson Motor Car Co. will build a 2-story garage, 42 x 120 feet, and has let the contract to John Rosenbaum of this city. The shop will cover 45 x 50 feet. Buell Anderson is manager.

JANESVILLE, WIS.—Emil J. Roesling will build 1-story addition, 40 x 60 feet, to public garage and will buy machinery to equip as a general repair shop.

MILWAUKEE—Frankenberg Refrigerating Machine Co. plans new plant for production of refrigerating machinery. Capitalization recently was increased to accommodate expansion program. William Linx is president.

MILWAUKEE—The Milwaukee sales and service branch of the International Harvester Co.'s motor truck department will erect a 2-story addition, 50 x 150 feet, at 82-90 Reed street, for general service and repair work. R. B. Hufford is local manager.

MILWAUKEE—The Sterling Tool & Mfg. Co. has plans for constructing plant at 1285 Thirtieth street. The Federal Engineering Co., Stephenson building, is completing plans for buildings to be in units of 40 x 120 feet. Carl F. Velguth is president of the Sterling company.

RACINE, WIS.—Wisconsin Metal Products Co. has taken bids on contract, for 1-story, 100 x 246-foot brick and steel plant. The company manufactures metal stampings, hardware specialties and automobile parts.

SOUTH MILWAUKEE, WIS.—Bentley Bros., 808 South Pierce street, Milwaukee is general contractor on a 2-story addition, 56 x 185 feet, for the Line Material Co., manufacturer of transmission line materials and accessories.

WEST BEND, WIS.—William Warnke, owner of the Warnke Sheet Metal Works, will build a $15,000 addition. The general contract has been let to the Federal Engineering Co., Stephenson building, Milwaukee.

Business in Canada

VICTORIA, B. C.—Minister of public works is receiving bids for the erection of a power plant with necessary mechanical equipment and six buildings for the University of British Columbia.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co., Ltd., Robinson and Buchanan streets, has awarded general contract for erection of addition to its plant to cost $41,500, to the Frid Construction Co., of Hamilton, Ont.

PARIS, ONT.—The Cassady Tool Co. is having plans prepared for the erection of a manufacturing plant here.

PRESTON, ONT.—Considerable damage to plant and machinery resulted from a fire in the building occupied here by the Steel Shank & Specialty Co.

ST. THOMAS, ONT.—Canadian National Railways, 230 St. James street, Montreal, Que., G. W. Gaye, purchasing agent; and the Wabash railway, Railway Exchange building, St. Louis, T. J. Frier, purchasing agent, are in the market for complete equipment for locomotive shops to be erected here at a cost of $220,000.

TORONTO, ONT.—The Macdonald Mfg. Co., Spadina avenue, has been incorporated to manufacture cast, forged and sheet metal enameled ware, tinned products, etc., for $10,000 by Morley H. Breuls, Harold E. Boston and Thomas D. Delamere.

WALKERVILLE, ONT.—Viking Pump Co. of Canada, Ltd., has been incorporated to manufacture rotary pumps, machinery, tools, iron, steel, brass and metal products, etc., with $40,000 capital by Jonathan B. Huyck of Detroit, Mich.; Wilbur N. Hostrop and Peter C. Peterson, both of Cedar Falls, Iowa.

WALKERVILLE, ONT.—Square "D" Co. of Canada, Ltd., has been iincorporated to acquire and take over the business here carried on by Milton S. Pierce, to manufacture and deal in electrical machinery, tools, supplies, etc., with $100,000 capital stock; by Stanley L. Springsteen, Walkerville, Ont.; Harry R. McGladdery and Harvey L. Barnes.

WOODSTOCK, ONT.—The Bickle Fire Engine Co., Dundas and Gonge streets, has let general contract for addition to its plant to cost $27,000 to W. J. Taylor, 14 Wellington street. *Noted March* 20.

LACHINE, QUE.—The Lachine Welding & Nickel Plating Co., 129 First avenue, is in the market for welding machines and other equipment. P. Carmoni is purchasing agent.

MONTREAL, QUE.—The Finished Steel Products, Ltd., has been incorporated to manufacture and deal in iron, steel, machinery, metal products, etc., with $50,000 capital by Reginald C. Stevenson, Frank R. Walker, and Arthur W. Knowles.

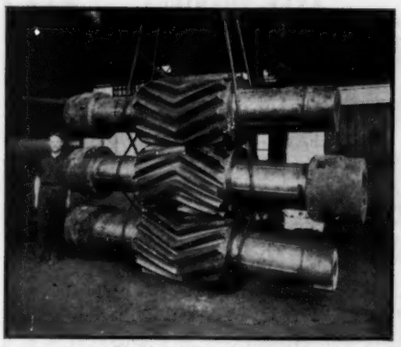
MONTREAL, QUE.—The Edmond Automobile Safety Lock, Ltd., has been incorporated to manufacture locks, safety devices, tools, instruments, etc. with $300,000 capital stock; by Berthe Tetreault, Eugene Edmond and Jean Trudel.

MONTREAL, QUE.—Victor Talking Machine Co., Ltd., has been incorporated to manufacture talking machines, musical instruments, machinery, motors, etc., with $1,000,000 capital stock; by Henry J. Trihey, William A. Gray, both of Westmount, Que., and Walter M. Kavanagh of Montreal.

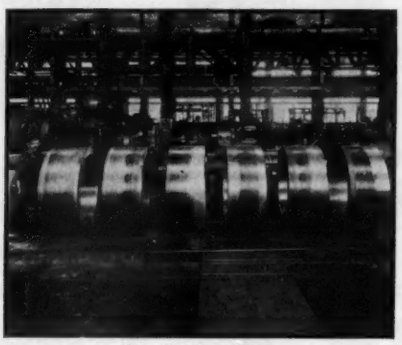
MONTREAL, QUE.—Peat Fuels, Ltd., 230 Dorchester street, is making alteration to its plant to cost $12,000. Proposed improvements will include changing from steam to electric driving equipment and the company is asking for prices on electrical machinery including motors, etc. E. V. Moore is engineer and purchasing agent.

PRINCE ALBERT, SASK.—The city is having plans prepared for addition to power plant here to accommodate new equipment including 1500 kilowatt steam turbine generator and condenser; 600-horsepower water tube boiler superheaters; 2 boilers; automatic stokers; overhead bunkers and necessary accessories.

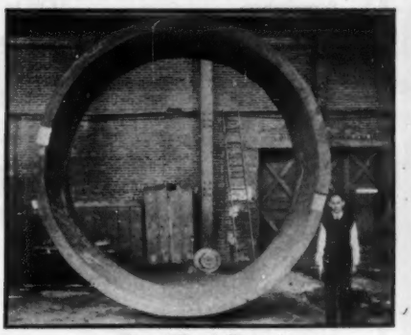
Bethlehem Forgings *for* Many Industries



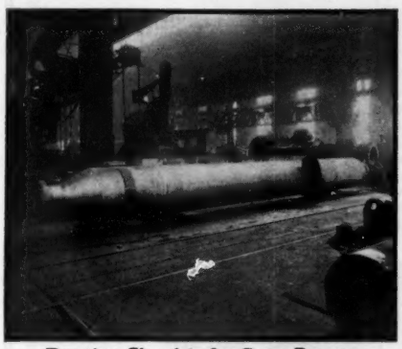
Rolling Mill Pinions



Ore Crusher Rings

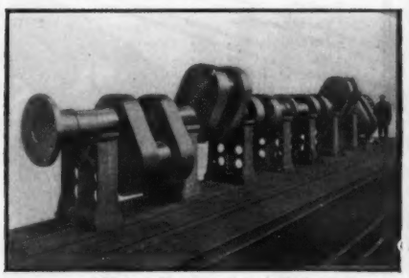


Gear Wheel Shroud

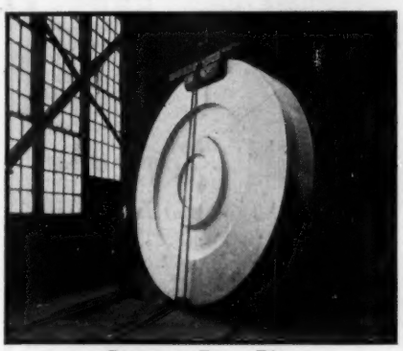


Reaction Chamber for Cross Process

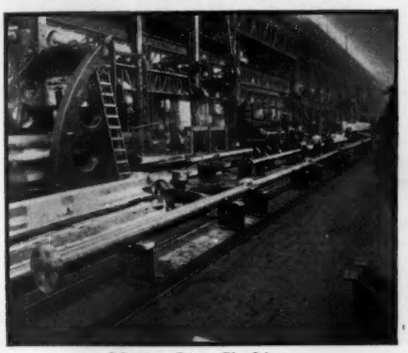
Marine Engine Crankshaft



Marine Engine Crankshaft



Gyroscope Rotor Disc



Marine Line Shafting

Drop Forging Automobile Axle

You will find Bethlehem Forgings in every industry where good forgings are required. The wide range of equipment to be found in Bethlehem Forge and Machine Shops, backed by all the steel-making facilities of Bethlehem Steel Company, is ample assurance of high quality in the finished product.

BETHLEHEM STEEL COMPANY

General Offices: BETHLEHEM, PA.

Sales Offices:

New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh
Buffalo Cleveland Cincinnati Detroit Chicago St. Louis San Francisco

Bethlehem Steel Export Corporation, 25 Broadway, New York City, Sole Exporter of our Commercial Products

BETHLEHEM

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	**14.00 to 15.00**
Boston (dealers)	11.00 to 11.50
Buffalo	16.50 to 17.00
Chicago	15.00 to 15.50
Cleveland	14.50 to 15.00
Cincinnati	13.00 to 13.50
Detroit (dealers)	13.50 to 14.00
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	11.00 to 11.50
Pittsburgh	17.00 to 17.50
St. Louis	14.75 to 15.25
Valleys	17.00 to 17.25
No. 1 railroad steel New York (dealers)	12.00 to 12.50

COMPRESSED SHEETS

Buffalo	15.00 to 15.50
Chicago	13.00 to 13.50
Cleveland	12.00 to 12.25
Detroit (dealers)	11.00 to 11.50
Pittsburgh	15.50 to 16.00
Valley	15.00 to 15.50

BUNDLED SHEETS

Buffalo	10.00 to 11.00
Cincinnati	9.50 to 10.00
Cleveland	10.50 to 11.00
Detroit	9.50 to 10.00
Eastern Pennsylvania	13.50 to 14.00
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50
Valleys	14.00 to 14.50

SHEET CLIPPINGS, LOOSE

Chicago	10.00 to 10.50
Detroit	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	12.00 to 12.50
Boston (dealers)	**12.00 to 12.50**
Chicago	19.00 to 19.50
Cincinnati	17.00 to 17.50
Cleveland (over 6t ft.)	14.00 to 14.25
St. Louis	18.50 to 19.00

STOVE PLATE

Birmingham	15.50 to 16.00
Boston (consumers)	15.50 to 16.00
Buffalo	16.00 to 16.50
Chicago	18.00 to 18.50
Cincinnati (net tons)	9.50 to 10.00
Cleveland	13.75 to 14.00
Detroit (net ton) dealers	14.00 to 14.50
Eastern Pennsylvania	15.00 to 16.00
New York (delaers)	11.50 to 12.00
Pittsburgh	13.50 to 14.00
St. Louis	17.00 to 17.50

LOW PHOSPHORUS

Buffalo	20.00 to 21.00
Cincinnati	14.00 to 14.50
Eastern Pennsylvania	20.00 to 21.00
Pitts., billet and bloom crops	20.50 to 21.00

SHOVELING STEEL

Chicago	14.50 to 15.00
Pittsburgh	13.50 to 14.00
St. Louis	14.50 to 15.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	19.50 to 20.50
Pittsburgh	19.00 to 19.50
St. Louis	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	15.50 to 16.00
Eastern Pennsylvania	15.00 to 16.00
St. Louis	16.00 to 16.50

BOILER PLATE, CUT

St. Louis	9.50 to 10.00

ANGLE BARS—STEEL

Chicago	17.50 to 18.00
St. Louis	17.00 to 17.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	**12.00 to 13.00**
Boston (dealers)	**13.50 to 14.00**
Buffalo	14.50 to 15.00
Cleveland, No. 1	11.50 to 12.00
Chicago, No. 1	15.00 to 15.25
Chicago, No. 2	15.00 to 15.50
Cincinnati, No. 1	10.50 to 11.00
Detroit, No. 2	13.50 to 14.00
Eastern Pennsylvania	18.00 to 19.00
New York, No. 1 (dealers)	**15.00 to 16.00**
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	17.00 to 17.50
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	15.00 to 15.50

WROUGHT PIPE

Boston (dealers)	10.00 to 10.50
Buffalo	11.00 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00 to 17.00

CITY WROUGHT

New York, long	**15.00 to 15.50**

BUSHELING

Buffalo	15.00 to 15.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.75 to 10.25
Cincinnati, No. 1	10.00 to 10.50
Cleveland, No. 1	10.75 to 11.00
Cleveland, No. 2	9.00 to 9.50
Detroit, No. 1	10.50 to 11.00
Detroit, No. 2 (new)	11.50 to 12.00
Detroit, No. 2 (old)	**9.50 to 10.00**
Eastern Pennsylvania	15.00to 16.00
Pittsburgh, No. 1	14.00 to 14.50
St. Louis, No. 1	14.00 to 14.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	9.00 to 9.50
Buffalo	11.50 to 12.00
Chicago	8.75 to 9.25
Cincinnati	9.00 to 9.50
Cleveland	10.75 to 11.00
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	13.75 to 14.25
New York (dealers)	10.25 to 10.75
Pittsburgh	13.00 to 13.50
St. Louis	8.50 to 9.00
Valleys	11.00 to 11.25

CAST IRON BORINGS

Birmingham (chemical)	**15.00 to 16.00**
Birmingham (plain)	**9.00 to 10.00**
Boston (chemical	11.50 to 12.00
Boston (dealers)	10.00 to 10.50
Buffalo	12.50 to 13.00
Chicago	12.50 to 13.00
Cincinnati	9.50 to 10.00
Cleveland	11.75 to 12.00
Detroit (dealers)	9.75 to 10.25
Eastern Pennsylvania (chem.)	16.00 to 17.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.25 to 10.75
Pittsburgh	13.50 to 14.00
St. Louis	11.50 to 12.00
Valleys	13.00 to 13.25

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.50 to 10.00
Cleveland	11.50 to 11.75
Detroit (dealers)	9.50 to 10.00
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	10.25 to 10.75

IRON AXLES

Birmingham	21.00 to 21.50
Boston (consumers)	**31.00 to 32.00**
Buffalo	25.00
Chicago	29.50 to 30.00
Cincinnati	20.50 to 21.00
Easetrn Pennsylvania	24.00 to 26.00
New York (dealers)	**25.75 to 26.25**
St. Louis	29.00 to 29.50

IRON RAILS

Buffalo	19.00 to 20.00
Chicago	19.00 to 19.50
Cincinnati	12.50 to 13.00
St. Louis	15.00 to 15.50

PIPES AND FLUES

Chicago	10.50 to 11.00
Cincinnati	9.00 to 9.50
Cleveland	9.00 to 9.25
St. Louis	10.00 to 10.50

RAILROAD GRATE BARS

Buffalo	16.00 to 16.50
Chicago	17.00 to 17.50
Cleveland	14.75 to 15.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	13.50 to 14.00
St. Louis	17.00 to 17.50

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Chicago, small	12.00 to 12.50
Cleveland (under 10 in.)	10.50 to 10.75
Cleveland (over 10 in.)	9.75 to 10.00
Detroit (dealers)	9.00 to 9.50

FORGE SCRAP

Boston (dealers)	9.50 to 10.00
Chicago	19.00 to 19.50
Eastern Pennsylvania	14.25 to 14.75

ARCH BARS AND TRANSOMS

Chicago	20.00 to 20.50
St. Louis	21.50 to 22.00

ANGLE BARS—IRON

Chicago	19.50 to 20.00
St. Louis	21.50 to 22.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	**11.00 to 11.50**
Buffalo	14.50 to 15.00
Chicago	13.50 to 14.00
Cleveland	13.00 to 13.25
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	16.00 to 16.50
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	**19.00 to 20.00**
Boston (consumers)	**20.00 to 21.00**
Buffalo	19.00 to 20.00
Chicago	20.50 to 21.00
Cleveland	18.50 to 19.00
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	19.00 to 19.50
St. Louis	21.00 to 21.50

SHAFTING

Boston (consumers)	**21.00 to 22.00**
Chicago	20.50 to 21.00
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	17.50 to 18.00
St. Louis	21.00 to 21.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	**17.00 to 18.00**
Birmingham, iron	**16.00 to 17.00**
Boston (consumers)6	**20.00 to 20.50**
Buffalo	18.00 to 18.50
Chicago, iron	18.00 to 18.50
Cincinnati	11.50 to 12.00
Eastern Pennsylvania	18.00 to 18.50
New York iron (dealers)	14.75 to 15.25
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	19.00 to 19.50
St. Louis, iron	18.00 to 18.50

NO. 1 CAST SCRAP

Birmingham, cupola	**20.00 to 21.00**
Boston (consumers)	21.50 to 22.00
Buffalo	19.00 to 19.50
Chicago, cupola	20.00 to 20.50
Cincinnati No. 1 machinery cupola (net tons)	17.50 to 18.00
Cleveland, cupola	20.00 to 20.50
Detroit (net tons) (dealers)	16.00 to 16.50
Eastern Pennsylvania, cupola	18.00 to 19.00
New York, cupola (dealers)	15.50 to 16.00
Pittsburgh, cupola	19.00 to 19.50
San Francisco	**25.00 to 26.00**
St. Louis, railroad	20.50 to 21.00
St. Louis, agricultural	20.00 to 20.50
Valleys	19.50 to 20.00

HEAVY CAST

Boston (consumers)	**19.00 to 19.50**
Buffalo (breakable)	15.00 to 15.50
Cleveland	12.00 to 12.50
Detroit (automobile) (net ton)	**23.50 to 24.00**
Eastern Pennsylvania	16.00 to 17.00
New York (dealers)	14.50 to 15.00
Pittsburgh	17.00 to 17.50

MALLEABLE

Boston (railroad)	**19.00 to 20.00**
Buffalo	19.00 to 19.50
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	19.25 to 20.25
Cincinnati, agricultural	12.50 to 13.00
Cincinnati, railroad	17.00 to 17.50
Cleveland, agricultural	16.75 to 17.00
Cleveland, railroad	18.00 to 18.50
Detroit (dealers)	**18.00 to 18.50**
Eastern Pennsylvania, railroad	16.50 to 17.50
Pittsburgh, railroad	17.00 to 17.50
St. Louis, agricultural	16.00 to 16.50
St. Louis, railroad	17.25 to 17.75

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	**17.00 to 17.50**
Boston (dealers)	14.00 to 14.50
Chicago	17.25 to 17.75
Cleveland	16.00 to 16.25
Detroit	14.00 to 14.50
Eastern Pennsylvania	18.00 to 19.00
New York (dealers)	15.50 to 16.00
Pittsburgh district	20.00 to 20.50
St. Louis	16.75 to 17.25

LOCOMOTIVE TIRES

Chicago	17.50 to 18.50
St. Louis	16.00 to 16.50

LOW PHOSPHORUS PUNCHINGS

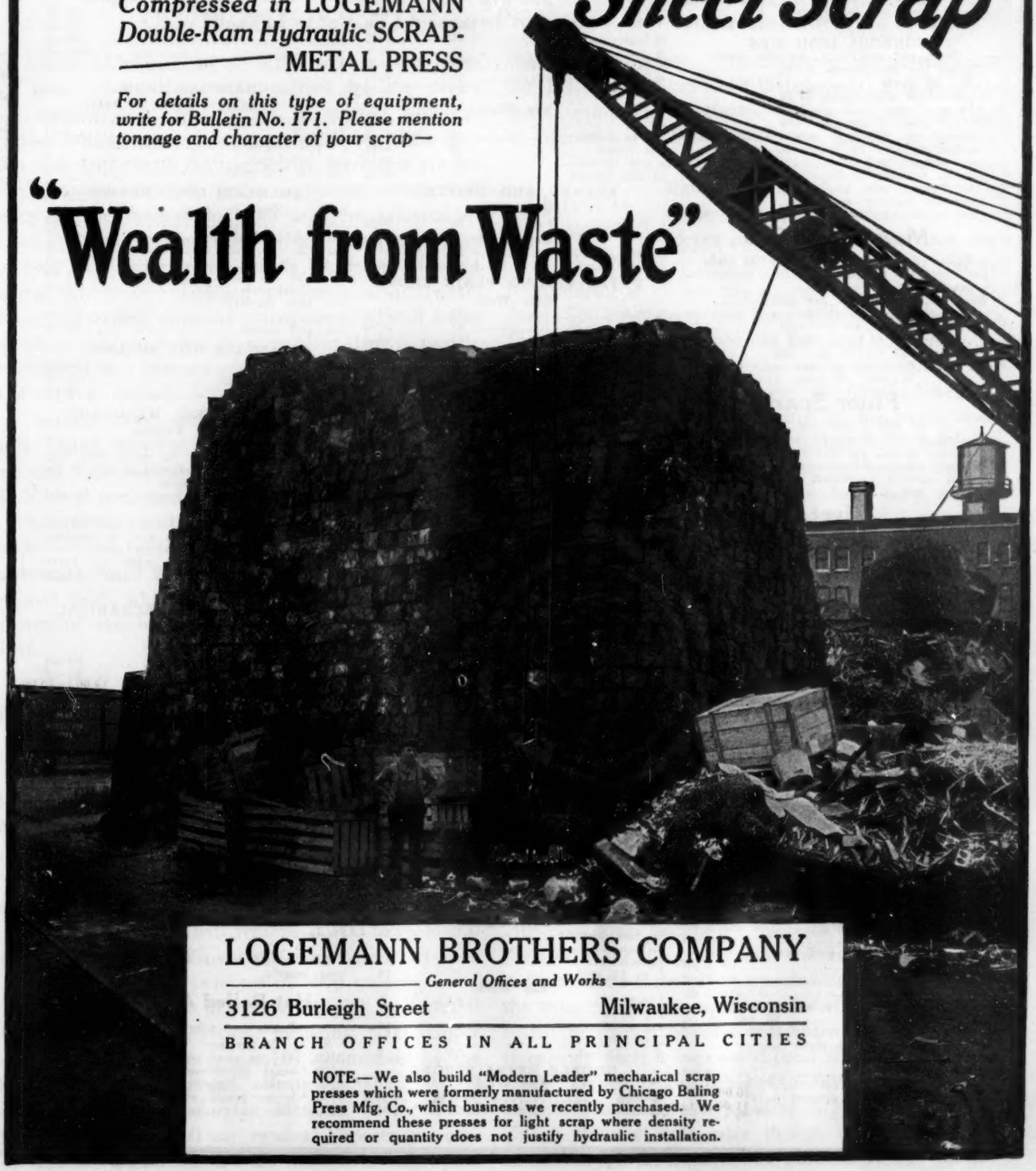
Chicago	17.00 to 17.50
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	20.00 to 20.50

Almost 2000 Tons - of "LOGEMANN HYDRAULIC-COMPRESSED" Sheet Scrap

Compressed in LOGEMANN *Double-Ram Hydraulic* SCRAP-METAL PRESS

For details on this type of equipment, write for Bulletin No. 171. Please mention tonnage and character of your scrap—

"Wealth from Waste"



LOGEMANN BROTHERS COMPANY

General Offices and Works

3126 Burleigh Street Milwaukee, Wisconsin

BRANCH OFFICES IN ALL PRINCIPAL CITIES

NOTE—We also build "Modern Leader" mechanical scrap presses which were formerly manufactured by Chicago Baling Press Mfg. Co., which business we recently purchased. We recommend these presses for light scrap where density required or quantity does not justify hydraulic installation.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron.$5.65
Mesabi bessemer, 55 per cent iron.... 5.40
Old Range nonbessemer, 51½ per cent iron 4.90
Mesabi nonbessemer, 51½ per cent iron 4.75

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent ..... 9.00 to 10.50
Copper free low phosphorus 53 to 65 per cent ..... 12.50 to 14.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent ..... 9.00 to 9.50
Algerian low phosphorus, 52 to 54 per cent ..... 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent.. 11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent ..... 9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent ..... 8.00 to 9.00
Alegerian foundry and basic, 50 to 54 per cent ..... 8.00 to 9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....
....nominal 44 to 46 cents c.i.f. tidewater
Indian, minimum 47 per cent.....
....nominal 44 to 46 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
.....Ordinary, 43 cents c.i.f. tidewater
.....Washed, 46 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton.$20.00 to 21.00
Washed gravel, imported duty paid eastern tidewater, per gross ton ..... 20.60 to 21.10

Rivets

Structural rivets, C. L. Pitts.. 2.65c to 2.70c
Structural rivets L. C. L. Pitts ..... 2.75c to 2.90c
Rivets, 7/16-in. and smaller.....
.....65, 10 and 5 to 70 and 10 off

Nuts and Bolts

(Up to 1¾ and 1½ inches inclusive)

Hot pressed square or hexagon blank .....$4.25 off list
Hot pressed square or hexagon tapped .....$4.25 off list
Cold punched square or hexagon blank .....$4.00 off list
Cold punched square or hexagon.... .....$4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger.....75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller.....80 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread .....60 and 5 off
Cut thread .....50, 10 and 5 off
Larger and longer.....50, 10 and 5 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread .....60, 10 and 5 off
Cut thread .....60 and 5 off
Larger and longer.....60-10 to 60-5 off
(¾ x 4 inches cold punched nuts)
Cut thread .....50, 5 off
Larger and longer.....50, 5 off
Lag screws .....65 and 5 off
Plow bolts Nos. 1, 2 and 3 heads.. .....50 and 10 off
4 to 10 heads.....50-10 + 20 off
Flat and round head stove bolts..... .....75, 10 and 5 off
Other stove bolts.....75 and 5 off
Tap bolts .....25 and 10 off
Bolt ends with hot pressed nuts..... .....60 and 5 off
Bolt ends with cold punched nuts.... .....50 and 5 off
Blank bolts .....60 and 10 off
Rough stud bolts with nuts..... .....45 and 5 off

Washers

Wrought washers.....$5.25 to $5.50 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	43	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers' carloads

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger.

STEEL (Lap Welded)
(Effective April 19, 1923)

2 and 2¼-inch ..... 23 off
2½ and 2¾-inch ..... 33 off
3-inch ..... 36 off
3¼ to 3¾-inch .....38½ off
4 to 13-inch ..... 42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch ..... +22
1¾-inch ..... +12
2 and 2¼-inch..... + 2
2½ to 3-inch 3
3¼ to 4½-inch..... 5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch ..... 51 off
1¼ and 1½-inch ..... 43 off
1¾-inch ..... 27 off
2 and 2¼-inch ..... 18 off
2½ and 2¾-inch..... 28 off
3 and 3¼-inch ..... 32 off
3½ and 3¾-inch ..... 33 off
4-inch ..... 37 off
4½ and 5-inch..... 29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch ..... 34 off
3½ and 3¾-inch..... 35 off
4-inch ..... 39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING
Base Discounts

Carbon, 0.10 to 0.20 per cent..... 83 off
Carbon, 0.30 to 0.40 per cent..... 81 off
Carbon 0.40 to 0.50 per cent.....net price
Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—
2300 (3½ per cent nickel)... 5.00c
3100 (nickel chromium)..... 4.00c
6100 (chrome vanadium)..... 4.75
6100 (chrome vanadium spring) 4.50c
9250 (Silico manganese spring) 4.00c to 4.25c